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DESIGN VERIFICATION TEST REPORT FOR THE M43A1 UPGRADE

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This report provides the results of pe	rformance testing conducted	at the U.S. Army Ed	gewood Research, Development and
Engineering Center (ERDEC) * on pr	ototype Ion Mobility Specti	rometry (IMS) upgrad	led M43A1 Detectors, identified as
the M43-APD. The M43-APD, deve	loped by Environmental Tec	hnologies Group, Inc	. (ETG), is an adaption of EIG's
ICAM-APD Chemical Agent Detecto	 The M43A1 Detector was 	s modified by removing	ng the existing ionization detection
components and replacing them with	ETG's IMS-based componen	its. The upgraded M4	43-APD provides increased sensitivity
to nerve agents, improved interference	e rejection for fewer false ala	arms and the capabilit	ty to detect blister agents. The testing
was conducted in two phases under co	ontract DAAM01-97-C-0033	. The first phase was	s performed at ETG and included low
temperture storage/operation, high ter	mperature storage/operation,	and simulant respons	se testing. The second phase was
performed at ERDEC and included ag	gent vapor testing at the Gov	ernment's surety facil	lities and battlefield interference
testing at ERDEC's M-Field. In gen	ieral, the M43-APD prototyr	pes performed well, h	owever, some minor deficiencies were
noted in the detection of GD vapor at	ambient temperatures and H	D vapor at high temp	peratures.

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PREFACE

The work described in this report was authorized under Contract No. DAAM01-97-C-0033. This work was started in September 1997 and completed in November 1998.

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DESIGN VERIFICATION TEST REPORT FOR THE M43A1 UPGRADE

1. EXECUTIVE SUMMARY

The M43A1 Chemical Detector, part of the M8A1 Chemical Detection System, is and will be for the immediate future the primary chemical detector for the U.S. forces worldwide. Since its initial fielding in 1985, approximately 35,000 systems have been manufactured and placed in over 20 countries. The M43A1 Upgrade Chemical Agent Detector (M43-APD) has been developed at ETG to improve the performance and extend the useful life of the current worldwide inventory.

The M43-APD upgrade is an adaptation of ETG's ICAM-APD chemical agent detector. The M43A1 detector is refurbished by removing the existing ionization detector (cell, pump, electronics) and replacing it with ETG's IMS-based sensor module. With the new sensor module, the M43A1 upgrade now has the capability to detect blister agents (the baseline M43A1 detects only nerve agents) and offers much improved interference rejection for fewer false alarms.

Under contract DAAM01-97-C-0033 to the U.S. Army ERDEC, ETG manufactured and tested two prototype M43-APD detectors. The testing was conducted in two phases. The first phase was performed at ETG and included low temperature storage/operation, high temperature storage/operation, and simulant response testing. The second phase was performed at ERDEC and included agent vapor testing at the Government's surety lab, and battlefield interference testing at M-field.

In general, the M43-APD detectors performed very well. The electronics, pumps, sensor and other hardware operated through the duration of the testing without a single failure. The agent vapor testing showed that the sensitivity and response times for the M43-APD are comparable to those established by ETG's ICAM-APD. Battlefield interference testing also showed that the M43-APD retains the ICAM-APD's high level of interference rejection.

There were, however, two problems encountered during the Government's agent vapor testing. In the first instance, the detectors did not alarm to GD vapor at ambient lab temperature. The test data showed that the GD agent vapor was producing strong peaks in the IMS signature, indicating good sensitivity, but the peaks were outside of the alarm windows that are defined by the agent detection algorithm. These no-alarm conditions can be improved with modification to the agent detection algorithm.

In the second instance, the M43-APD detectors did not alarm to HD at an elevated temperature of +52 °C. There is a contaminant in the negative-mode IMS signature which impedes the formation of a strong reactant ion, with a corresponding reduction in the sensitivity to HD. The precise location of the contaminant could not be isolated, but it appears to be within the M43A1 case assemblies. With some minor changes to the M43-APD pneumatics, ETG believes that this problem can be overcome and the M43-APD will have the same agent detection as the ICAM-APD.

2. INTRODUCTION

2.1 <u>Test objectives</u>. The M43A1 Upgrade Chemical Agent Detector (M43-APD) was developed by ETG under contract to the U.S. Army ERDEC (DAAM01-97-C-0033). This contract was part of an engineering study to determine the feasibility of developing a low-cost option to upgrade the capability of the existing M43A1 Chemical Agent Detectors and extend their useful life.

Testing was conducted in two separate phases. In the first phase, ETG conducted design verification testing of two prototype M43-APD detectors. This testing was conducted prior to delivery of the prototypes to the Government, and was limited to simulant testing using H-type and G-type simulants, and operational testing at low temperature (-40 °F) and high temperature (+120 °F).

The second phase was government evaluation testing to characterize the agent-detection performance and the false-alarm performance of the prototype detectors. The second phase of testing was performed at ERDEC using not only the two ETG prototype M43-APD detectors, but also prototype detectors from two other companies. The objective of this testing was to validate contractor performance claims, and to provide a comparison of the prototypes against each other and against the Army's general requirements for chemical-agent detection.

2.2 <u>Description of the equipment under test: M43A1 Upgrade Chemical Agent Detector.</u>
The M43A1 Chemical Detector, part of the M8A1 Chemical Detection System, is and will be for the immediate future the primary chemical detector for the U.S. forces worldwide. Since its initial fielding in 1985, approximately 35,000 systems have been manufactured and placed in over 20 countries. The M43A1 Upgrade Chemical Agent Detector (M43-APD) has been developed at ETG to improve the performance and extend the useful life of the current worldwide inventory.

The M43-APD is shown in Figures 1 and 2. In general, the M43A1 detector is refurbished by removing the existing ionization detector (cell, pumps, electronics) and replacing it with ETG's IMS-based ICAM-APD sensor module. This approach improves the performance over the baseline M43A1 detector in several ways. First, the IMS sensor will detect blister agents (mustard gases and lewisite) which the baseline M43A1 does not. Second, the IMS sensor has a lower limit of detection for nerve agents, with response times generally between 10 and 30 seconds. Third, the ETG sensor contains an automatic cleardown following an alarm, eliminating the need for a soldier to manually reset the detector. Finally, the ETG sensor is remarkably better at rejecting battlefield interferences.



FIGURE 1. Prototype M43A1 Upgrade Chemical Agent Detector (M43-APD)

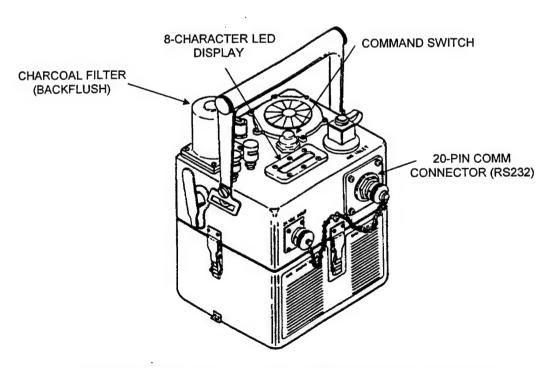


FIGURE 2. M43A1 Upgade (M43-APD), overview of new features.

- **2.2.1** Serial numbers of the M43-APD detectors. Two prototype M43-APD chemical agent detectors were tested. The serial numbers are 980206-4 and 980206-5. Both detectors are identical in physical configuration. Serial number 980206-4 is also referred to as Detector 4 in this report and is the first Government prototype. Serial number 980206-5 is also referred to as Detector 5 in this report and is the second Government prototype.
- **2.2.2 Software version**. The version of the operating software and agent-detection algorithm used during each phase of the testing is shown below in Table 1. For reference, a summary of software development during the M43-APD development is included as Table 2.

TABLE 1. Software version used during M43-APD testing

Test	Software Version
Low temperature	M502a
High temperature	M502b
Simulant sensitivity	M502a / M502b
Agent vapor	M502b
M-field	M502b / M502d

TABLE 2. Summary of improvements made to the ETG operating software and agent-detection algorithm that have been made since ICAM-APD testing in July 97 (DAAM01-97-M-0071) and which have been incorporated into the M43-APD software.

<u>Date</u> June 97	Version A422c	•	Features and Changes Configuration baseline, delivered with 6 ICAM-APD detectors at the conclusion of contract DAAM01-97-M-0071.
June 97	A423c	•	Provides additional interference rejection for AFFF.
Aug 97	A425b	•	Updated GA, GB, GD, VX detection windows based on testing during June and July 1997.
		•	Revised criteria which defines allowable positions of the reactant ion peaks during startup.
		•	Revised the criteria that defines when the detector automatically re- calibrates based on movement of the reactant ions.
		•	Revised agent-detection classifiers that are used during cold- temperature operation.
		•	Raised the upper limit at which the ammonia-source heater is turned

Date	Version	Features and Changes
<u> </u>		on at cold temperatures.
Mar 98	M500	 Added hardware drivers and operator interfaces required to operate the M43-APD.
Mar 98	M502a	 Updated the agent-detection algorithm to improve GD sensitivity.
		 Revised agent-detection classifiers that are used during cold- temperature operation to correct for differences in the internal case temperature between ICAM-APD and M43-APD.
		 Corrected a software bug which was preventing the ammonia source heater from turning on at low temperatures.
		 Raised the upper limit at which the ammonia-source heater is turned on at cold temperatures to correct for differences in the internal case temperature between ICAM-APD and M43-APD.
7 May 98	M502b	 Lowered the alarm thresholds for HD in order to allow the H confidence sample to alarm following high-temperature storage.
30 Aug 98	M502d	 Disabled the built-in test feature which checks for a short across the remote terminals in order to allow the M43-APD to operate with the Government's prototype battery box.

3. ETG DESIGN VERIFICATION TESTING: HIGH/LOW TEMPERATURE AND SIMULANT SENSITIVITY

Design verification testing of the two prototype detectors was performed at ETG from March through May 1998. The testing included climatic testing (high temperature storage/operation, low temperature storage/operation), and simulant response testing.

Climatic testing was performed in ETG's environmental chambers by conditioning the detectors in a shutdown state, and then performing a startup test. Following startup, the detectors were operated for four hours and confidence tests performed at the end of this period.

Simulant response testing was performed using the standards generator that ETG uses for acceptance testing of the CAM and ICAM-APD. The simulant concentrations are the same as described in the CAM purchase descriptions for a "7-bar H" and "5-bar G" response. The requirement is that the detectors alarm within 10 seconds to these concentrations and then clear to a no-alarm status within two minutes.

The M43-APD detectors passed all design verification testing. Detailed test logs are presented in Table 3 and Table 4.

During high temperature testing, the test data showed a contaminant in the negative mode signature (blister mode). The contaminant interferes with formation of both the negative reference peak and subsequently the ability of the H-simulant from forming a well-defined ion peak. As a result, the detector has reduced sensitivity to the H confidence sample, and as we discovered during the Government's agent vapor testing it has also reduced the sensitivity to HD agent vapor. The source of the contamination appears to be a material within the M43A1 case assembly which is outgassing at high temperatures. The contaminant probably enters the sensor module through the sieve pack assembly, which uses a vent to equalize pressure between the interior volume of the cell and the case interior.

The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve breather effect is pulling case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly.

TABLE 3. Test log, M43-APD design verification testing, detector S/N 980206-4

DATE		DESCRIPTION	COMMENTS
3/24/98	6:00 PM	STARTUP TEST (AMBIENT) CONFIDENCE CHECK (AMBIENT) H/G SIMULANT TEST	PASSED PASSED PASSED
	7:00 PM	MOVED TO EVC 001, BEGIN COLD SOAK AT -40 C	
3/25/98	12:10 PM	STARTUP (-40 C) CONFIDENCE CHECK (-40 C)	PASSED (NOTE 1) PASSED (NOTE 1)
	5:28 PM	CONFIDENCE CHECK (-30 C)	PASSED (NOTE 1)
3/26/98	1:15 PM	CONFIDENCE CHECK (-30 C)	PASSED (NOTE 1)
	3:15 PM	BEGIN RAMP TO AMBIENT TEMPERATURE	·
3/27/98	9:15 AM	STARTUP (AMBIENT) CONFIDENCE CHECK (AMBIENT)	PASSED PASSED

NOTE 1 -- ALTHOUGH DETECTOR 4 PASSES THE PERFORMANCE CHECKS, THE SIGNATURES SHOW BROAD-BAND NOISE WHICH EXCEED M43-APD / ICAM-APD ACCEPTANCE CRITERIA. CAUSE WAS ISOLATED TO A GROUND LOOP CREATED BY CONTACT BETWEEN THE IMS SENSOR MODULE AND THE NICKEL PLATING OF THE M43A1 CASETOP. RE-TESTED ON 3/30 TO 4/1. (NOTE THAT DETECTOR 4 IS THE FIRST OF TWO GOVERNMENT PROTOTYPES.

3/30/98	3:15 PM	STARTUP (AMBIENT) CONFIDENCE CHECK (AMBIENT) H/G SIMULANT TEST	PASSED (RE-TEST) PASSED (RE-TEST) PASSED (RE-TEST)
	5:45 PM	MOVED TO EVC 001, BEGIN COLD SOAK AT -40 C	
3/31/98	8:38 AM	STARTUP (-40 C) CONFIDENCE CHECK (-40 C)	PASSED (RE-TEST) PASSED (RE-TEST)
	4:30 PM	CONFIDENCE CHECK (-30 C)	PASSED (RE-TEST)
4/1/98	8:35 AM	CONFIDENCE CHECK (-30 C)	PASSED (RE-TEST)
	8:45 AM	BEGIN RAMP TO AMBIENT TEMPERATURE	
	3:00 PM	CONFIDENCE CHECK (AMBIENT)	PASSED (RE-TEST)
5/22/98	4:17 PM	STARTUP (AMBIENT) CONFIDENCE CHECK (AMBIENT) H/G SIMULANT TEST	PASSED (NOTE 2) PASSED PASSED
	6:15 PM	MOVE TO EVC POOL NO. 0277, BEGIN HO	OT SOAK AT +52 C
5/26/98	8:57 AM	STARTUP (+52 C) CONFIDENCE CHECK (+52 C)	PASSED PASSED
	1:16 PM	CONFIDENCE CHECK (+52 C)	PASSED

1:16 PM CONFIDENCE CHECK (+52 C) PASSED

NOTE 2 - FOLLOWING THE SUCCESSFUL COMPLETION OF LOW-TEMPERATURE TESTING,
THE TEST PROGRAM WAS INTERUPTED DUE TO PROBLEMS WITH DETECTOR 5, THE
SECOND OF THE TWO GOVERNMENT PROTOTYPES. DURING HIGH-TEMPERATURE
TESTING OF DETECTOR 5 (SEE TABLE 4 ENTRY FOR 3/31/98), THERE WAS A
CONTAMINANT IN BOTH THE NEGATIVE AND POSITIVE MODES. THE IMPACT OF THE
CONTAMINANT WAS TO INCREASE STARTUP TIME BY REDUCING SENSITIVITY TO THE H
CONFIDENCE SAMPLE. FOLLOWING AN INVESTIGATION, THE FOLLOWING CORRECTIVE
ACTIONS WERE IMPLEMENTED ON BOTH OF THE PROTOTYPE DETECTORS, AND THE
TEST PROGRAM WAS RE-STARTED. THE COMPONENTS WERE WASHED AND BAKED,
ACTIVATED CHARCOAL WAS ADDED TO THE VENT WITHIN THE SIEVE PACK ASSEMBLY,
THE INLET ASSEMBLY WAS REDESIGNED, AND THE H-ALARM THRESHOLD WAS
LOWERED.

TABLE 4. Test log, M43-APD design verification testing, detector S/N 980206-5

<u>DATE</u> 3/24/98	6:00 PM	DESCRIPTION STARTUP TEST (AMBIENT) CONFIDENCE CHECK (AMBIENT) H/G SIMULANT TEST	COMMENTS PASSED PASSED PASSED
	7:00 PM	MOVED TO EVC 001, BEGIN COLD SOAK AT -40 C	
3/25/98	12:10 PM	STARTUP (-40 C) CONFIDENCE CHECK (-40 C)	PASSED PASSED
	5:37 PM	CONFIDENCE CHECK (-30 C)	PASSED
3/26/98	1:32 PM	CONFIDENCE CHECK (-30 C)	PASSED
	3:15 PM	BEGIN RAMP TO AMBIENT TEMPERATURE	
3/27/98	9:30 AM	STARTUP (AMBIENT) CONFIDENCE CHECK (AMBIENT)	PASSED PASSED
3/30/98	5:00 PM	MOVE TO EVC POOL NO. 0277, BEGIN HO	T SOAK AT +52 C
3/31/98	9:30 AM	STARTUP (+52 C)	FAILED (NOTE 3)

NOTE 3 -- DATA AND SIGNATURES SHOW A CONTAMINANT IN THE POSITIVE MODE WHICH PROHIBITS FORMATION OF THE NH3 REACTANT ION. CAUSE DETERMINED TO BE A LEAK IN THE SIEVE PACK ASSEMBLY. CORRECTIVE ACTION WAS TO REMOVE AND REPLACE THE SIEVE PACK ASSEMBLY. ALSO, CONTAMINANTS IN THE NEGATIVE MODE ARE REDUCING SENSITIVITY TO H CONFIDENCE SAMPLE. CORRECTIVE ACTIONS -- WASHED AND BAKED COMPONENTS, ADDED ACTIVATED CHARCOAL TO VENTS WITHIN THE SIEVE PACK ASSEMBLY, RE-DESIGNED INLET ASSEMBLY AND INLET CAP, LOWERED ALARM THRESHOLD REQUIRED FOR H ALARM. RE-TESTED 5/22 TO 5/26.

5/22/98	5:30 PM	STARTUP (AMBIENT) CONFIDENCE CHECK (AMBIENT) H/G SIMULANT TEST	PASSED (RE-TEST) PASSED PASSED
	6:15 PM	MOVE TO EVC POOL NO. 0277, BEGIN HO	T SOAK AT +52 C
5/26/98	8:40 AM	STARTUP (+52 C) CONFIDENCE CHECK (+52 C)	PASSED PASSED
	1:28 PM	CONFIDENCE CHECK (+52 C)	PASSED

4. GOVERNMENT TESTING, AGENT VAPOR

Two prototype M43-APD detectors were subjected to agent-vapor evaluation testing at the ERDEC surety laboratories from 3 Aug to 18 Aug 1998. ETG personnel were present to support testing, perform maintenance and capture detector digital data. Table 5 summarizes the agent test results.

In general, the M43-APD detectors performed very well. The electronics, pumps, sensor and other hardware operated through the duration of the testing without a single failure. The agent vapor testing showed that the sensitivity and response times for the M43-APD are comparable to those established by ETG's ICAM-APD. Battlefield interference testing also showed that the M43-APD retains the ICAM-APD's high level of interference rejection. Most test trials resulted in proper alarms as expected. The exceptions are described below.

In most cases GD did not alarm at ambient lab temperature (+20 °C). Analysis showed that the GD agent vapor produced strong peaks in the IMS signature, indicating good sensitivity. However, the position of the peak was not within the alarm criteria for GD as defined by the agent detection algorithm. The positions for all IMS peaks (reactant ion reference and agent) were at longer drift times than normal (to the right). This caused the peak location ratios (PLR) to be smaller than normal (to the left). Although these no-alarm conditions could be improved by modifying the GD peak position criteria, the improved agent detection may come at the expense of increased false alarms. Evaluation of interference materials with peaks in this region showed a potential for false alarms. One possibility is that replacing the sieve pack with newly charged one would restore the peak drift times and ratios to their normal values. Any hardware evaluation would require additional effort to isolate the cause of this observation.

In most cases GB alarmed at low temperature (-30 °C), but two misses did occur. The GB peak location ratios were near the lower edge of the defined window. This window could be expanded. Evaluation of interference material peaks showed no new potential GB false alarms in the region of interest. However, as with GD, a hardware evaluation may produce an action for restoring peak positions.

VX detection was very good at all conditions. In the case of ambient temperature, some no-alarms occurred earlier in the day before the concentration of VX was accurately established. Also, prior to VX testing, high concentration HD was performed at 50 mg/m³ and significant HD peaks were observed, sometimes producing HD alarms before a VX alarm was triggered. As time went on, the residual HD disappeared and VX was detected.

Both H confidence sample and HD agent detection were affected by high temperature operation. The test chamber temperature was +52 °C, while the internal detector temperature was observed to be +53 to +54 °C. In most cases an H-simulant and HD peaks positions were in the HD window, but the amplitudes (SECD) were below the

alarm threshold. The negative reactant ion (Rx-) peak was observed to be a triple peak, rather than the normal single peak. It should be noted that during outdoor interference testing on 31 Aug, the ambient temperature was +34 °C, but because of sun loading the internal detector temperature was measured at +48 to 49 °C. Under these conditions, no triple peak was observed for the Rx- ion and the H confidence sample alarmed consistently with a very strong peak.

TABLE 5. Summary of Agent Vapor Testing, ERDEC, August 1998

Date	Agent	Conc.	RH	Temp.	Det#	Response	Alarm Time (mm:ss)	Clear Time (mm:ss)	Notes
8/3/98	GD	0.091	0%	20	1	NO ALARM			1
8/3/98	GD	0.091	0%	20	1	NO ALARM			1
8/3/98	GD	0.091	0%	20	1	NO ALARM			1
8/3/98	GD	0.091	0%	20	2	NO ALARM			1
8/3/98	GD	0.091	0%	20	2	NO ALARM			1
8/3/98	GD	0.091	0%	20	2	NO ALARM			1
8/4/98	GD	0.122	90	20	1	NO ALARM			1
8/4/98	GD	0.122	90	20	2	NO ALARM			1
8/4/98	GD	0.13	90	20	1	NO ALARM			1
8/4/98	GD	0.13	90	20	2	NO ALARM			1
8/4/98	GD	0.122	90	20	1	NO ALARM			1
8/4/98	GD	0.122	90	20	2	NO ALARM			11
8/4/98	GD	1.017	90	20	1	NRV LOW	01:13	01:54	
8/4/98	GD	1.017	90	20	2	NO ALARM			1
8/4/98	GD	1	90	20	1	NRV LOW	00:10	00:37	
8/4/98	GD	1	90	20	2	NO ALARM			1
8/4/98	GD	1	90	20	1	NRV LOW	00:20	00:47	
8/4/98	GD	1	90	20	1	NRV LOW	00:40		2
8/4/98	GD	1	90	20	2	NO ALARM			I
8/4/98	GD	1	90	20	2	NO ALARM			1
8/5/98	GA	0.104	2	20	1	NRV LOW	00:32	00:30	
8/5/98	GA	0.104	2	20	2	NRV LOW	00:13	00:33	
8/5/98	GA	0.115	2	20	1	NRV LOW	00:19	00:29	
8/5/98	GA	0.115	2	20	2	NRV LOW	00:15	00:30	
8/5/98	GA	0.116	2	20	1	NRV LOW	00:20	00:30	
8/5/98	GA	0.116	2	20	2	NRV LOW	00:10	00:30	
8/5/98	GA	0.14	92	20	1	NRV LOW	00:23	00:18	
8/5/98	GA	0.14	92	20	2	NRV LOW	00:15	00:30	
8/5/98	GA	0.111	92	20	1	NRV LOW	00:25	00:30	
8/5/98	GA	0.111	92	20	2	NRV LOW	00:13	00:29	
8/5/98	GA	0.119	92	20	1	NRV LOW	00:34	00:29	
8/5/98	GA	0.119	92	20	2	NRV LOW	00:14	00:31	

TABLE 5. Summary of Agent Vapor Testing, ERDEC, August 1998

Date	Agent	Conc. (ug/L)	RH	Temp.	Det #	Response	Alarm Time (mm:ss)	Clear Time (mm:ss)	Notes
0/6/08	GB	0.099	3	20	1	NRV LOW	00:20	00:19	
8/6/98	GB	0.099	3	20	2	NRV LOW	00:18	00:22	
8/6/98	GB	0.033	- 3	20	1	NRV LOW	00:17	00:20	
8/6/98	GB	0.113	3	20	2	NRV LOW	00:20	00:24	
8/6/98		0.117	3	20	1	NRV LOW	00:17	00:19	
8/6/98	GB	0.117	3	20	2	NRV LOW	00:18	00:19	
8/6/98	GB	0.117	90	20	1	NRV LOW	00:16	00:20	
8/6/98	GB	0.108	90	20	2	NRV LOW	00:18	00:19	
8/6/98	GB		90	20	1	NRV LOW	00:20	00:20	
8/6/98	GB	0.109	90	20	2	NRV LOW	00:18	00:19	
8/6/98	GB	0.109	90	20	1	NRV LOW	00:15	00:19	
8/6/98	GB	0.114	90	20	2	NRV LOW	00:17	00:19	
8/6/98	GB	0.114		20	1	BLS LOW	00:06	00:30	
8/7/98	HD	1.933	3	20	2	BLS LOW	00:03	00:29	
8/7/98	HD	1.933	3	20	1	BLS LOW	00:04	00:29	
8/7/98	HD	2.12	3	20	2	BLS LOW	00:03	00:26	
8/7/98	HD	2.12	3	20	1	BLS LOW	00:06	00:29	
8/7/98	HD	2.047	3	20	2	BLS LOW	00:09	00:27	
8/7/98	HD	2.047	88	20	1	BLS LOW	00:07	00:29	
8/7/98	HD	2.197	88	20	2	BLS LOW	00:07	00:30	
8/7/98	HD	2.197	88	20	1	BLS LOW	00:03	00:29	
8/7/98	HD	2.154	88	20	2	BLS LOW	00:08	00:29	
8/7/98	HD	2.154	88	20	1	BLS LOW	00:04	00:29	
8/7/98	HD	2.258	88	20	2	BLS LOW	00:04	00:26	
8/7/98	HD	36	3	20	1	BLS LOW	00:05	01:10	
8/7/98	HD	36	3	20	2	BLS LOW	00:07	01:03	3
8/7/98	HD	34	3	20	1	BLS LOW	00:06	01:07	
8/7/98	HD	34	3	20	2	BLS LOW	00:02	00:57	
8/7/98	HD	52.917	3	20	1	BLS LOW	00:06	01:30	3
8/7/98	HD	52.917	3	20	2	BLS LOW	00:03	00:59	
8/7/98		?	3	20	1	NRV LOW	01:27	00:11	4, 5
8/8/98	VX	?	3	20	2	NRV LOW	01:48	00:26	4, 5
8/8/98		?	3	20	1	NO ALARM		00:00	4, 5
8/8/98	VX	0.058	3	20	2	NRV LOW	00:25	00:21	
8/8/98	VX	0.058	3	20	1	NRV LOW	00:55	00:26	
8/8/98	VX		3	20	1	NRV LOW	00:10	00:25	
8/8/98	VX	0.15	3	20	2	NRV LOW	00:13	00:23	
8/8/98	VX	0.15	90	20	$\frac{2}{1}$	NO ALARM		00:00	4, 5
8/8/98	VX		90	20	2	NRV LOW	01:16	00:20	
8/8/98	VX	0.11		20	1	NRV LOW	00:38	00:18	
8/8/98	VX	0.1	90	20	1	NRV LOW	00:09	00:25	
8/8/98	VX	0.1	90	20	2	NRV LOW	00:12	00:23	
8/8/98	VX	0.31	90	20	1	NRV LOW	00:02	00:30	
8/8/98	VX VX	0.31	90	20	1	NRV LOW	00:15	00:24	

TABLE 5. Summary of Agent Vapor Testing, ERDEC, August 1998

Date	Agent	Conc.	RH	Temp.	Det #	Response	Alarm Time	Clear Time	Notes
Date	Agent	(ug/L)	1417	(°C)		•	(mm:ss)	(mm:ss)	
8/10/98	HD	2.06	25	52	1	NO ALARM			6
8/10/98	HD	2.06	25	52	2	NO ALARM			6
8/11/98	GB	0.112	0	-30	1	NO ALARM			7
8/11/98	GB	0.112	0	-30	2	NRV LOW	00:08	00:22	
8/11/98	GB	0.112	0	-30	1	NO ALARM			7, 8
8/11/98	GB	0.112	0	-30	2	NRV LOW	00:05	00:24	
8/11/98	GB	0.104	0	-30	1	NRV LOW	00:12	00:23	
8/11/98	GB	0.104	0	-30	2	NRV LOW	00:06	00:22	
8/11/98	GB	0.104	0	-30	1	NRV LOW	00:24	00:20	
	GB	0.104	0	-30	2	NRV LOW	00:20	00:11	
8/11/98		0.114	0	-30	1	NRV MED	00:16	00:25	
8/12/98	GD_	0.114	0	-30	2	NRV MED	00:07	00:25	
8/12/98	GD		0	-30	1	NRV MED	00:12	00:33	
8/12/98	GD	0.114	0	-30	2	NRV MED	00:07	00:24	
8/12/98	GD	0.114	0	-30	1	NRV MED	00:14	00:25	
8/12/98	GD	0.114	0	-30	2	NRV MED	00:07	00:24	
8/12/98	GD		29	52	1	NRV LOW	00:20	00:20	
8/13/98	GB	0.121	29	52	2	NRV LOW	00:21	00:21	
8/13/98	GB	0.121	29	52	1	NRV LOW	00:19	00:20	
8/13/98	GB_	0.121	29	52	2	NRV LOW	00:20	00:23	
8/13/98	GB	0.121	29	52	1	NRV LOW	00:20	00:20	
8/13/98	GB	0.125	29	52	2	NRV LOW	00:20	00:20	
8/13/98	GB GB	0.125	29	52	1	NRV LOW	00:16	00:20	
8/13/98	GB	0.125	29	52	2	NRV LOW	00:19	00:20	
8/13/98		0.126	29	52	1	NRV LOW	01:20	00:20	
8/13/98	GD	0.126	29	52	2	NRV LOW	00:08	00:20	
8/13/98	GD GD	0.126	29	52	1	NRV LOW	00:07	00:20	
8/13/98	GD	0.126	29	52	2	NRV LOW	00:09	00:21	
8/13/98	GD	0.128	29	52	1	NO ALARM			1
8/13/98	GD	0.118	29	52	2	NRV LOW	00:08	00:20	
8/13/98 8/13/98	GD	0.118	29	52	1	NRV LOW	00:14	00:23	
8/13/98	GD	0.118	29	52	2	NRV LOW	00:08	00:21	
	VX	0.055	26	52	1	NRV LOW	00:28	00:23	
8/14/98	VX	0.055	26	52	2	NRV LOW	00:08	00:23	
8/14/98	VX	0.055	26	52	1	NRV LOW	00:15	00:26	
8/14/98	VX	0.055	26	52	2	NRV LOW	00:06	00:26	
8/14/98	VX	0.055	26	52	1	NRV LOW	00:30	00:31	
8/14/98	VX	0.055	26	52	2	NRV LOW	00:19	00:26	
8/14/98		2.63	0	0	1	BLS MED	00:07	00:50	
8/17/98	HD	1.93	0	0	2	BLS LOW	00:07	00:46	
8/17/98	HD	1.93	0	0	1	BLS MED	00:06	00:47	
8/17/98	HD		0	0	2	BLS LOW	00:05	00:33	
8/17/98	HD	1.93	0	0	1	BLS LOW	00:05	00:47	
8/17/98	HD HD	1.93 1.93	0	0.	2	BLS LOW	00:04	00:44	

TABLE 5. Summary of Agent Vapor Testing, ERDEC, August 1998

Date	Agent	Conc. (ug/L)	RH	Temp.	Det #	Response	Alarm Time (mm:ss)	Clear Time (mm:ss)	Notes
8/18/98	VX	0.09	0	0	1	NRV LOW	01:27	00:22	
	VX	0.09	0	0	2	NRV LOW	00:37	00:23	
8/18/98	VX	0.09	0	0	1	NRV LOW	01:38	00:23	9
8/18/98				0	2	NRV LOW	00:48	00:22	
8/18/98	VX	0.07	0				00:49	00:23	
8/18/98	VX	0.07	0	0	<u>l</u>	NRV LOW			
8/18/98	VX	0.07	0	0	2	NRV LOW	00:14	00:28	

Notes

- 1. GD peaks are present, but just outside the alarm window established by the detection algorithm.
- 2. Cleardown time was not recorded.
- 3. Detector realarmed following cleardown.
- 4. VX concentration uncertain.
- 5. Residual HD peaks observed from previous tests.
- Multiple peaks in the vicinity of the negative reactant ion shown that there is negative-mode contaminant at +52 °C which reduces the sensitivity to HD.
 Detector also did not respond to the H confidence sample.
- 7. GB peaks are present, but just outside the alarm window established by the detection algorithm.
- 8. Detector alarmed after the agent vapor was removed.
- 9. Detector recalibrated approximately 1 minute into the challenge, and then alarmed immediately afterward.

5. GOVERNMENT TESTING: INTERFERENCES

Two prototype M43-APD detectors were subjected to outdoor interference testing at the ERDEC M-Field test site from 31 Aug to 3 Sep 1998. ETG personnel were present to support testing, perform maintenance and capture detector digital data. Each detector was subjected to three trials of each interference challenge. Time was allowed between each trial for each detector to clear before the next trial. Between each different interference, confidence checks were performed to verify detector operation. On every occasion, both detectors alarmed properly to the confidence sample.

On the first day of testing, the detector operating software had to modified to make the prototype detectors compatible with the new battery box that ERDEC had developed as a replacement for the BA3517/U. The M43-APD has a built-in test feature which checks the remote terminals for a short in the field wire which connects to the M42 remote alarm. The Government's prototype battery box has a feature which sends voltage across the remote terminals when the battery voltage is low. This feature fools ETG's built-in test into thinking that there is a short across remote terminals.

The Government's prototype battery box has a diode-protected circuit which can be used by the M43-APD built-in test. It is a simple hardware fix which requires only that the positive and negative polarity of the M43-APD test signal be reversed to match the polarity of the Government's circuit.

Table 6 summarizes the interference test results. Most test trials resulted in no false alarms. The exceptions are described below.

JP8 fuel vapor caused false alarms in 3 of 6 trials. JP8 produced two peaks, both of which occurred in VX windows and displayed a false alarm. The peak second difference amplitudes (SECD) were not large, but were higher than the VX alarm threshold. The VX peak SECD criteria is quite low to accommodate the required low concentration (0.04 mg/m3) of purified VX. M56 turbine exhaust caused false alarms in 4 of 6 trials. All of these alarms occurred immediately after the turbine was shut off at the end of each trial. Also, M56 exhaust did not produce any peaks until shut down. It was learned that the M56 turbine purges residual JP8 fuel at shut down. Examination of IMS feature data revealed that the peaks produced by the assumed M56 exhaust were in the same positions as for JP8 fuel vapor and caused VX alarms. Thus, the M56 turbine exhaust did not cause false alarms, but the residual JP8 did.

DS2 caused a false alarm in 1 of 6 trials. Two peaks were observed in the positive mode. One had a large amplitude, but was not in any agent window. The second had a small amplitude and was in a GB window. The peak SECD was below the GB alarm criteria in most cases, but occasionally grew to a value slightly above the alarm threshold and caused an alarm.

Yellow smoke false alarmed in 6 of 6 trials HD, L, VX and GB; violet smoke alarmed 3 of 6 times as L; and green smoke alarmed 6 of 6 times as GB. All colored smokes created interference peaks in both the negative and positive detection polarities. Yellow smoke had large peaks in the HD and Lewisite windows as well as large peaks in the GB and VX windows. Violet smoke produced a large peak in the Lewisite window. Green smoke produced a large peak in a GB window. Green smoke had significant effect on the IMS spectrum, causing broad unresolved peaks and sometimes eliminating the positive reactant ion (Rx+) completely.

TABLE 6. Battlefield interference testing of M43-APD, 31 Aug to 3 Sep 1998

INTERFERENCE	DISTANCE (FEET)	FALSE ALARMS / TRIALS	TIME OF EXPOSURE	Notes
	(====)		(MIN.)	
GAS EXHAUST	10	0/6	2	
DIESEL EXHAUST	10	0/6	2	
GAS VAPOR	5	0/6	2	
BURNING GAS	15	0/6	3	
DIESEL VAPOR	5	0/6	2	
BURNING DIESEL	15	0/6	2	
KEROSENE VAPOR	5	0/6	2	
BURNING KEROSENE	15	0/6	2	
JP8 FUEL VAPOR	5	3/6	2	VX
JP8 BURNING	15	0/6	2	
BURNING CARDBOARD	15	0/6	2	
BURNING WOOD	35	0/6	2	
DOUSED FIRE	22	0/6	2	
BURNING TIRE	22	0/6	2	
WHITE PHOSPHOROUS	50	0/6	2	
YELLOW SMOKE	50	6/6	2	HD, L, VX, GB
VIOLET SMOKE	50	3/6	2	L
RED SMOKE	50	0/6	2	
GREEN SMOKE	50	6/6	2	GB
HTH	5	0/6	2	
BLEACH	10	0/6	2	·
SUPER TROPICAL BLEACH	10	0/6	. 2	
DS2	10	1/6	2	GB
AFFF	10	0/6	2	
BREAKFREE (CLP)	3	0/6	2	
RBC	3	0/6	2	
LSA OIL	3	0/6	2	
INSECT REPELLENT AEROSOL	3	0/6	2	

TABLE 6. Battlefield interference testing of M43-APD, 31 Aug to 3 Sep 1998

INTERFERENCE	DISTANCE (FEET)	FALSE ALARMS / TRIALS	TIME OF EXPOSURE (MIN.)	Notes		
INSECT REPELLENT LOTION	3	0/6	2			
INSECTICIDE	3	0/6	2			
M56 TURBINE EXHAUST	25	4/6	2	VX, note 1		
M56 FOG OIL SMOKE	50	0/6	2			
M76 GRENADE	20	0/6	5 (SECONDS)			
TOTALS						
ALARMS / TRIALS		23/198	11.6%			
MATERIALS CAUSING A	LARMS	6/33	18.2%			

Notes:

1) Post alarm. False alarm occurred when turbine shut off and JP8 fuel is automatically purged from system. Since this is a false alarm to JP8 vapor, the materials causing alarm becomes 5/33 or 15.2%.

6. TEST INCIDENT REPORTS

During the testing, five test incident reports (TIR) were generated. Detailed discussions are given in the following pages. A summary is provided in Table 7, below.

TABLE 7. Summary of Test Incident Reports.

TIR No.	<u>Description</u>
1	Signal shows excessive peak-to-peak noise during low-temperature operation.
2	Detector did not start up within 30 minutes following hot storage.
3	Detectors do not alarm to GD vapor.
4	Detectors will not alarm to H confidence sample or HD vapor following hot storage.
5	Detectors display Remote Alarm Error when connected to prototype battery boxes.

Program: DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

Reported by: Glenn Weaver

Equipment: 2428980 M43-APD Chemical Agent Detector

S/N: 980206-4

Date: March 25, 1998

Test Location: ETG Environmental Chamber No. EVC-001

Nature of Operation: Startup at -40°C, following 17 hours of storage at -40°C

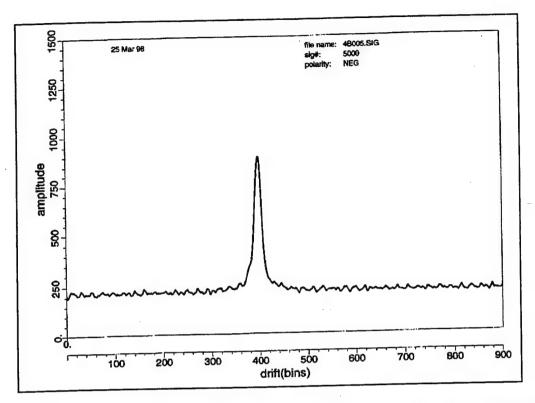
Problem: Signal shows excessive peak-to-peak noise during low-temperature operation.

Discussion: Following low-temperature storage, the detector was started up at -40 °C. The detector successfully started and alarmed to the confidence sample, but the oscilloscope showed a broadband noise which appeared to exceed the acceptance test criteria. The signature plots confirmed this.

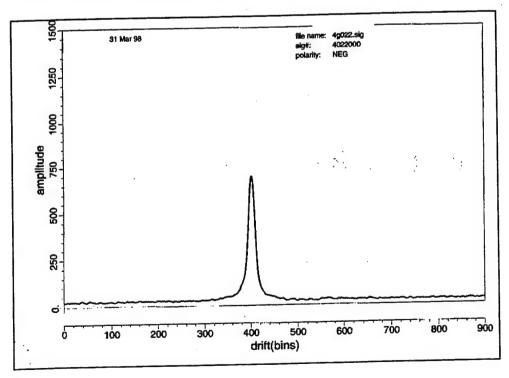
Repair Action: Removed the nickel plating from the inside surface of the casetop in the immediate vicinity of the hole in the casetop where the inlet assembly passes through.

Cause of Problem: The cause of noise was isolated to a ground loop created by contact between the IMS sensor module and the nickel plating of the M43A1 casetop. The contact was occurring at the point where the aluminum inlet housing goes through the case top.

Corrective Action: The short-term solution was to scrape away the nickel plating from around the hole in the casetop where the inlet passes through. Long-term design solutions are to isolate the sensor using an electrically-insulating gasket, or to improve the tolerance stackup so that there is no contact with the nickel plating.



Detector 980206-4, low-temperature storage/operation; signatures taken during operation at -40 °C show excessive broad-band noise.



Detector 980206-4, low-temperature storage/operation; signatures taken during operation at -40 °C following repair. Cause of the noise was isolated to a ground loop due to contact between the IMS sensor and the nickel plating in the casetop

Program: DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

Reported by: Jeff Siebert

Equipment: 2428980 M43-APD Chemical Agent Detector

S/N: 980206-5

Date: March 31, 1998

Test Location: ETG Environmental Chamber Pool No. 0277

Nature of Operation: Startup at +52°C, following 16 hours of storage at +52°C

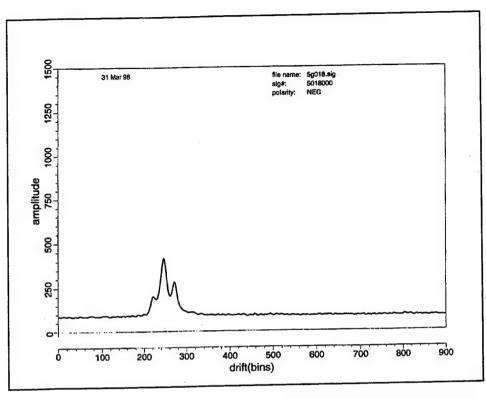
Problem: Detector did not start up within 30 minutes following hot storage.

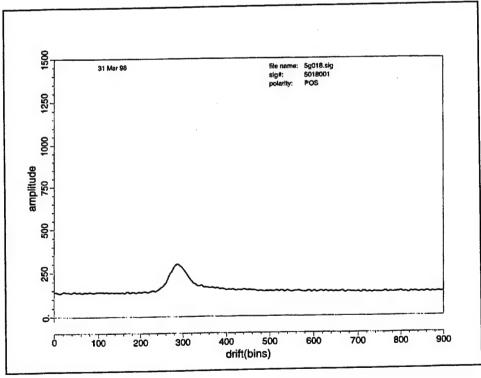
Discussion: Following non-operational storage at +52 °C, the detector was upcapped and power turned on. After 5 minutes in STANDBY, the detector had not normalized and displayed CAL ERR (failure to calibrate). After 30 minutes the detector still had not calibrated and the test was stopped.

Repair Action: Washed and baked all components, added activated charcoal to vents within the sieve pack assembly, replaced the sieve pack assembly due to suspected leak, redesigned the inlet assembly and inlet cap, and lowered the alarm threshold required for H alarm.

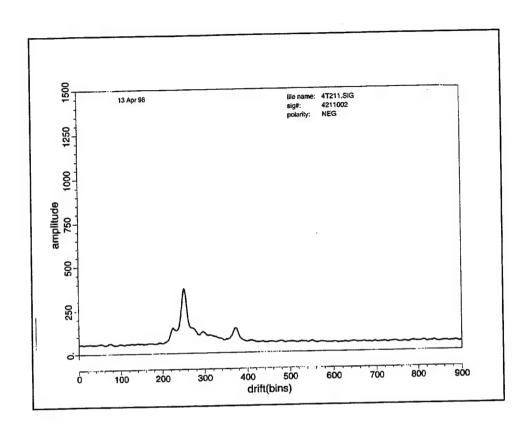
Cause of Problem: The cause of the failed startup was a contaminant in the positive mode which prevented the positive reference ion peak (NH₃) from forming. When a reference ion peak is not present, the detector will not calibrate. In addition, there was a contaminant in the negative mode signature which interferes with formation of both the negative reference peak and subsequently the ability of the H-simulant from forming a well-defined ion peak. As a result, the detector will not alarm to the H confidence sample because the second difference amplitude of the H-simulant peak is below the alarm threshold. The source of the contamination appears to be a material within the M43A1 case assembly which is outgassing at high temperatures. The contaminant probably enters the sensor module through the sieve pack assembly, which uses the vent to equalize pressure between the interior volume of the cell and the case interior.

Corrective Action: The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve breather effect is pulling case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly.

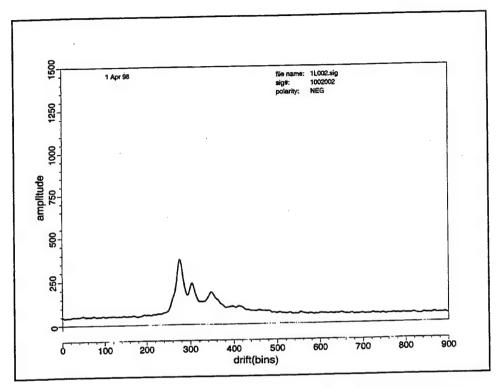


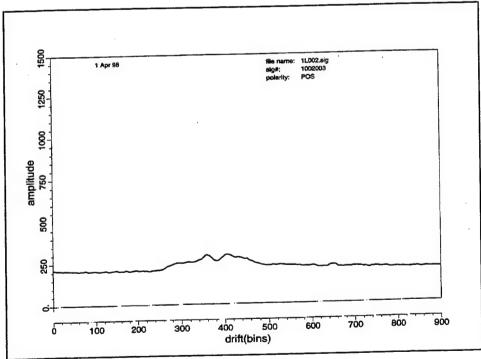


Detector 980206-5, high-temperature storage/operation; signatures taken during backflush at +52 °C, approximately 30 minutes after initial power. Detector was unable to calibrate following storage at +52 °C for 20 hours; the cause is a contaminant in the positive mode which is preventing the NH₃ ion peak from forming.



Detector 980206-4, high-temperature storage/operation; signature of an H confidence sample taken during operation at + 52 °C, 15 minutes after initial power on following 90 hours of storage at +52 °C. Detector does not alarm to the H confidence sample because the second difference amplitude of the H-simulant ion peak is SECD=266, which is below the alarm threshold of SECD=500.





Signatures of an air sample drawn from the interior of detector 980206-5 after the detector had been stored at +52 °C for 16 hours. Sample was acquired by attaching a 1-ft Viton tube to the inlet of detector 980206-1, just cracking open detector case, and inserting the Viton tube inside the case. Long startup times are being caused by contaminants which build up inside the M43A1 cases at high temperatures and are working their way inside the IMS closed loop system.

Program: DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

Reported by: George Lozos

Equipment: 2428980 M43-APD Chemical Agent Detector

S/N(s): 980206-4 and 980206-5

Date: Aug 3, 1998

Test Location: ERDEC Surety Lab Building E3510

Nature of Operation: Agent vapor testing at room temperature

Problem:. Detectors do not alarm to GD vapor

Discussion: On the first day of agent vapor testing, the detectors did not alarm to GD at

ambient lab temperature (+20 °C).

Repair Action: No repairs were made.

Cause of Problem: GD agent vapor produced strong peaks in the IMS signature, indicating good sensitivity. However, the position of the peak was not within the alarm criteria for GD as defined by the agent detection algorithm. The positions for all IMS peaks (reactant ion reference and agent) were at longer drift times than normal (to the right). This caused the peak location ratios (PLRs) to be smaller than normal (to the left).

Corrective Action: These no-alarm conditions could be improved by modifying the GD peak position criteria, but the improved agent detection may come at the expense of increased false alarms. Evaluation of interference materials with peaks in this region showed a potential for false alarms. One possibility is that replacing the sieve pack with newly charged one would restore the peak drift times and ratios to their normal values. Any hardware evaluation would require additional effort to isolate the cause of this observation.

Program: DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

Reported by: Glenn Weaver

Equipment: 2428980 M43-APD Chemical Agent Detector

S/N(s): 980206-4 and 980206-5

Date: Aug 10, 1998

Test Location: ERDEC Surety Lab Building E3510

Nature of Operation: Hot-temperature startup following storage at +52 °C

Problem:. Detectors will not alarm to H confidence sample or HD vapor following hot

storage.

Discussion: Detectors had been shutdown at ambient room temperature for 40 hours following VX vapor testing, also at ambient room temperature. At 7:30 am the test crew ramped the environmental chamber to +52 °C with detectors in shutdown state. Detectors were powered on after 2 hours of storage. Detectors were able to calibrate and successfully alarm to the G confidence sample, but did not alarm to the H-confidence sample or the HD vapor at 2.0 ug/L.

Repair Action: None. When detectors were removed from the chamber, the signatures immediately cleaned up and the detectors alarmed to the H confidence sample.

Cause of Problem: This problem was first observed during design verification testing at ETG (see TIR #2), but the symptoms were not as pronounced during DVT as they were during agent testing. At ETG, the detectors were stored for 96 hours at +52 °C and were able to alarm to confidence sample. There is a contaminant in the negative mode signature which interferes with formation of both the negative reference peak and subsequently the ability of the H-simulant and HD vapor from forming a well-defined ion peak. As a result, the detector will not alarm to either sample because the second difference amplitude of the H-simulant peak is below the alarm threshold. The source of the contamination appears to be a material within the M43A1 case assembly which is outgassing at high temperatures. The contaminant probably enters the sensor module through the sieve pack assembly, which uses a vent to equalize pressure between the interior volume of the cell and the case interior.

Corrective Action: The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve breather effect is pulling case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly

Program: DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

Reported by: Glenn Weaver

Equipment: 2428980 M43-APD Chemical Agent Detector

S/N(s): 980206-4 and 980206-5

Date: Aug 3, 1998

Test Location: ERDEC M-Field

Nature of Operation: Operation with Government prototype battery boxes

Problem: Detectors display Remote Alarm Error when connected to prototype battery

boxes.

Discussion: ERDEC has developed a new battery box as a replacement for the BA3517/U. When the detectors were connected to the new batteries, the built-in test detected a short across the remote terminals and subsequently displayed the error message. When connected to the original BA3517/U, the detectors do not display this error.

Repair Action: Downloaded new software version M502d, which disables the built-in test for a short across the remote terminals.

Cause of Problem: The Government's new battery has a feature which sends voltage across the remote terminals when the battery voltage is low. This feature fools ETG's built-in test into thinking that there is a short across the remote terminals.

Corrective Action: The Government's new battery box has a diode-protected circuit which can be used by the M43-APD built-in test. It is a simple hardware fix which requires only that the positive and negative polarity of the M43-APD test signal be reversed to match the polarity of the Government's circuit.

7. CONCLUSIONS

Over a six-month period of testing the prototype M43-APD Chemical Agent Detector, the results have been very favorable. The main objective in this feasibility study was to demonstrate that ETG's IMS-based sensor module and agent-detection algorithm can be successfully integrated into the M43A1 detector. This objective has been met. The ICAM cell, APD electronics, power supplies, display, sieve pack, manifold, and communication ports were each successfully repackaged to fit within the M43A1 case assembly. The design is essentially complete and is ready for transition to production; M43A1 detectors can be refurbished economically and in large quantities. The M43-APD operator interface has been simplified to require only two steps; plug in the power and perform a confidence test.

There were no hardware (pumps, cell, electronics) failures reported for any components during either the design verification testing or the Government evaluation testing. On each day during the Government's testing, the M43-APD detectors were ready to go, which is a reflection of the maturity of ETG's APD sensor technology. From this aspect the M43-APD design should be considered a low risk.

Testing also showed that our agent-detection algorithm, which has been tested on numerous occasions by the Government, is directly transferable from the ICAM-APD to the M43-APD. Again this is a reflection of the maturity of the proposed upgrade.

Despite the overall success of the detectors during this test program, there were two problems encountered during agent-vapor testing which require some discussion. First, the detectors did not alarm to GD vapor at ambient lab temperature (+20 °C). ETG's analysis of this problem showed that the GD agent vapor was producing strong peaks in the IMS signature, indicating good sensitivity. The position of the peaks, however, was outside of the alarm windows that are defined by the agent detection algorithm. These no-alarm conditions can be improved with modification to the detection algorithm, but the improved agent detection may come at the expense of increased false alarms.

From our past experience, we know that insect repellents produce IMS peaks in the vicinity of the GD peaks, and that expanding the alarm windows for GD may produce false alarms to insect repellents. With this in mind, ETG used laptop computers during M-Field testing to collect IMS signatures of the various materials, including insect repellents, in order to make a quantitative evaluation of the impact of widening the GD alarm windows. The data showed that the insect repellents produce peaks close to the GD windows, but none had amplitudes which would have produced an alarm, even if the GD windows are widened to the point where GD would have produced alarms in the agent vapor tests.

Also during agent-vapor testing, the M43-APD detectors did not alarm to HD at an elevated temperature of +52 °C. The signature data taken during these tests shows that there is a contaminant in the negative-mode signature that is impeding the formation of a

strong reactant ion, with a corresponding reduction in the sensitivity to HD. ETG can not be sure, but we believe that this contaminant is a material which is outgassing from the M43A1 case assemblies. The contaminant peaks disappeared almost immediately after the detectors were removed from the environmental chambers and returned to room temperature. It is important to note that the contaminant does not affect blister-agent detection at lower temperatures and that nerve-agent detection is not affected.

During the first day of M-Field testing, the air temperature was 90 °F and the detectors were operated in the full sun. The internal temperature of the detector is continuously monitored by the operating software; the test data from M-Field measured the internal temperature at +48 °C, which is only 6 °C lower than the internal temperature measured during the HD testing. The M-Field test signatures do not show the negative-mode contaminant and they responded to the confidence samples 100% of the time. In other words, the contaminant is only affecting operation in the extreme high-temperature conditions.

The contamination is an important failure which ETG has taken very seriously. The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve-breather effect pulls case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly.

Blank

APPENDIX A. ETG DESIGN VERIFICATION TEST DATA

Blank

Detector S/N	980206-4	Date:	3-24-98	
Software Ver	502-1	Time:	18:00	
Location: _	CAM CLEANROOM			
1. Initial Pow	ver On			
A.	Uncap the air inlet and air e	xhaust. Plac	e charcoal filter o	ver the inlet.
B.	Connect communication cal	ole and begin	"Logall" file.	4A001. DAT
C.	Turn horn volume to full (cl	ockwise)		
D.	Connect power and begin st	opwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display shov	vs M43-APD		<u> </u>	
Display shov	vs the Software Version			
Display shov	vs LED TEST followed by tes	t patterns		
Display shov	vs HORNTEST and horn beep	s twice		
Display shov	vs SELFTEST			
Display shov	vs STANDBY and backflush	begins		
Display shov	vs READY within 30 minutes	after startup		
Reco	rd Time 2:39		_	
Display goes	blank approx. 15 seconds aft	er READY		-
To stad bon	M.		Date	3-24-98

Detector S	S/N <u>980206-4</u> Dat	re: <u>3-24-</u>	96	
Software '	Ver. <u>502-1</u> Tin	ne:	05	
Location:	CAM CLEANROOM			
1. Connec	ct communications cable and begin "L	ogall"		
A.	Record datafile name	ords)	Management of the Control of the Con	
B.	Use menu to turn on display (opti	4,	4002.316	F-AIR H 13
2. "H" Sin	mulant Test			G 1s
C.	Alarm response		Pass	Fail
	Challenge Time sec		N/A	
	Time to Alarm 4 sec		N/A	
	Horn Sounds			
	Display correctly identifies Blister (N	ote 1)		
	Record response(s)	<u> </u>		
	NERV M	ED		
	Cleardown less than 5 minutes after a Record cleardown time50 se			
	Note 1 Detector must alarm either l	BLS or BLS/NR	V	
3. "G" Sir	nulant Test		-	
D.	Alarm response		Pass	Fail
	Challenge Time sec		N/A	
	Time to Alarmsec		N/A	
	Horn Sounds			
	Display correctly identifies Nerve (No	ote 2)		
	Record response(s) NERV LOW			
	BLST LO	W		
	Cleardown less than 5 minutes after a Record cleardown time 37 see			·
	Note 2 Detector must alarm either l	NRV or NRV/B	LS	
Tested by:	A	Date	3-24-	98

H/G Simulant Test Data Sheet

Detector S/N 980206-4	_ Date: _	3-24-98	
Software Ver. 502-1	_ Time: _	18:05 18:1	15
Location: CAM CLEANROOM		3-24-99	
·		,	
1. Connect communications cable a			
A. Record datafile name			
(Attach copy of data with tes		4A003.514	F-AIR
B. Use menu to turn on display	(optional)		
2. "H" Simulant Test			G 103
C. Challenge detector for 10 se	conds using CAM	1 "H" Simulant genera	tor (7 bars)
D. Alarm response		<u>Pass</u>	<u>Fail</u>
Challenge Time 3 Time to Alarm 25 3 Horn Sounds	_sec	N/A	
Time to Alarm $\frac{25}{3}$	_sec	N/A	
Horn Sounds $\eta_{3-2^{A}}^{3}$			
Display correctly identifies I	Blister (Note 1)		
Record response(s)	LST LOW		
Cleardown less than 5 minut	es after alarm		
Record cleardown time			
Note 1 Detector must alarm e		S/NRV	
3. "G" Simulant Test			
E. Challenge detector for 10 se	conds using CAM	ſ "H" Simulant genera	tor (7 bars)
F. Alarm response		Pass	Fail
Challenge Time4	sec	N/A	
Time to Alarm4	sec	N/A	
Horn Sounds			
Display correctly identifies N	Nerve (Note 2)		
Record response(s)N	ERV MED		
		,	
Cleardown less than 5 minut Record cleardown time			
Note 2 Detector must a	alarm either NRV	or NRV/BLS	
Tested by:		Date3:	<u> 24 - 98</u>

Form M43-DVT-003

Rev 0 (March 24, 1998)

Detector S/N 980206 - 4

Date: 3-25-98

Software Ver. <u>5.02A-1</u> Time: 12:10:19

Location: EVC - 001 STARTUP @ -40°C

1. Initial Power On

- Uncap the air inlet and air exhaust. Place charcoal filter over the inlet. A.
- Connect communication cable and begin "Logall" file. 48004.DAT B.
- Turn horn volume to full (clockwise) C.
- Connect power and begin stopwatch. D.
- E. -Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u> </u>	
Display shows the Software Version	<u> </u>	
Display shows LED TEST followed by test patterns	<u> </u>	
Display shows HORNTEST and horn beeps twice		
Display shows SELFTEST	<u> </u>	
Display shows STANDBY and backflush begins	$\overline{}$	
Display shows READY within 30 minutes after startup	<u> </u>	
Record Time /2:39		
Display goes blank approx. 15 seconds after READY	<u> </u>	

Date

Detector S/	N 980206-4 Da	ate: _	3-23		
Software V	er. <u>5.02 A - 1</u> Ti	me:			
Location:	EVC-001		STARTU	P@ .	-40°C
1. Connect	communications cable and begin "l	Logall	"		
A.	Record datafile name 480 (Attach copy of data with test re				
B.	Use menu to turn on display (op	tional)		
2. "H" Sim	nulant Test				
	Alarm response Challenge Timeisec Time to Alarmisec Horn Sounds Display correctly identifies Blister (Record response(s)			Pass N/A N/A 	<u>Fail</u>
	Cleardown less than 5 minutes after Record cleardown time Note 1 Detector must alarm either		-	 ev	
3. "G" Sim	nulant Test				
	Alarm response Challenge Timesec Time to Alarm7sec Horn Sounds Display correctly identifies Nerve (I			Pass N/A N/A	Fail
	Cleardown less than 5 minutes after Record cleardown timeo:\(\nu \in 5\)		- n -	<u></u>	
	Note 2 Detector must alarm eithe	r NR	V or NRV/I	BLS	
Tested by:	Hle Est Sean		Date		-25-99

	Detector S/N 980206-4 Date: 3-2	5-98	
	Software Ver 5.02 A - 1 Time:		
	Location: EVC - 001		
5143 1008.514 F-MA	1. Connect communications cable and begin "Logall" A. Record datafile name 4007. DAT (Attach copy of data with test records) B. Use menu to turn on display (optional) 2. "H" Simulant Test	NEI	TOR IS ALARMING RUE LOW - ITTENT W/ FILTER
Ć	C. Alarm response Challenge Time	Pass N/A N/A	<u>Fail</u>
	Cleardown less than 5 minutes after alarm Record cleardown time //30" Note 1 Detector must alarm either BLS or BLS/N		
	3. "G" Simulant Test		
	D. Alarm response Challenge Time sec Time to Alarm sec	Pass N/A N/A	Fail
	Horn Sounds Display correctly identifies Nerve (Note 2) Record response(s)		
	Cleardown less than 5 minutes after alarm Record cleardown time 0:50	_	
	Note 2 - Detector must alarm either NRV or NRV/I Tested by: Date	BLS <u>3-25</u>	-98

Detector S/N	980206-4	Date:	3-26-98	
Software Ver.	5.02A-1	Time:	13:15	
	EVC-001			
1. Connect co	ommunications cable and beg	gin "Logall"		
A.	Record datafile name(Attach copy of data with to	4DOI3. DA est records)	<u>.T</u>	
B.	Use menu to turn on displa	y (optional)		
2. "H" Simul	ant Test			
C. Al	arm response		<u>Pass</u>	<u>Fail</u>
	nallenge Time sec		N/A	
	me to Alarmsec		N/A	
	orn Sounds	stor (Note 1)		
	splay correctly identifies Bli Record response(s)			
	Record response(s)		_	
Cl	eardown less than 5 minutes Record cleardown time2			
No	ote 1 Detector must alarm	either BLS or B	LS/NRV	
3. "G" Simul	ant Test			
D 41			Pass	Fail
	larm response hallenge Timelsec		N/A	
	me to Alarmsec		N/A	
	orn Sounds		<u> </u>	
	isplay correctly identifies Ne	erve (Note 2)	<u> </u>	
D	Record response(s) NRV	LOW		
			,	
C	leardown less than 5 minutes Record cleardown time			
N	ote 2 Detector must alarm	either NRV or l	NRV/BLS	
Tested by:	<u></u>	Date	<u> 3-2</u>	6-98

Detector S/N	980206-4	Date:	3-27-98	· · · · · · · · · · · · · · · · · · ·
Software Ver.	5.02A-1	Time:	9:15 Am	
Location:C	CAM CLEAN ROOM			
1. Initial Powe	er On			
Α.	Uncap the air inlet and air e	xhaust. Place	charcoal filter o	ver the inlet.
B.	Connect communication ca	ble and begin	"Logall" file.	4EBO015.DAT
C.	Turn horn volume to full (c			
D.	Connect power and begin s			
E.	Verify startup sequence.			
			Pass	Fail
Display show	s M43-APD			
-	s the Software Version			
-	s LED TEST followed by tes	st patterns	~	
_	s HORNTEST and horn beep			
_	s SELFTEST		1	
_	s STANDBY and backflush	begins		
Display show	s READY within 30 minutes	s after startup		
Recor	d Time2:39			
Display goes	blank approx. 15 seconds aft	ter READY		
Tested by:	Mle Wear		Date	3-27-98

Detector S/N 980206 - 4	Date:	3-27	-98	
Software Ver. 2. 5.02A - 1	Time:	9:	18	··········
Location: CAM CLEAN				
1. Connect communications cable and	begin "Logal	l"		. ~
A. Record datafile name (Attach copy of data wi	th test records	73 74 s)	<u>E</u> 0/3. J	DAI
B. Use menu to turn on dis	splay (optiona	1)		
2. "H" Simulant Test				
C. Alarm response			<u>Pass</u>	<u>Fail</u>
Challenge Time/	sec		N/A	
	sec		N/A	
Horn Sounds				
Display correctly identifies	Blister (Note	: 1)		
Record response(s)				
	LS MED		./	
Cleardown less than 5 min Record cleardown time	utes after alar	m 		
Note 1 Detector must als	arm either BL	S or BLS/N	IRV	
3. "G" Simulant Test				
D. Alarm response			Pass	Fail
Challenge Time/_	sec		N/A	
Time to Alarm 4	sec		N/A	
Horn Sounds				
Display correctly identifie	s Nerve (Note	2)	/	
Record response(s)				
		_		
Cleardown less than 5 min Record cleardown time	nutes after alar	rm <u>~</u>		
Note 2 Detector must a	larm either NI	RV or NRV	//BLS	
Tested by: Men Wen	7	Date		27-98

Detector S/N	980206-4	Date: 3	-30-98	
Software Ver	5.02A-1	Time:	15:15	
Location: 2	AM CLEAN ROOM			
1. Initial Pow				
A.	Uncap the air inlet and air e	xhaust. Place	charcoal filter of	over the inlet.
B.	Connect communication cal	ole and begin "	'Logall" file.	4F017.DAT
C.	Turn horn volume to full (cl	ockwise)		
D.	Connect power and begin st	opwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	s M43-APD		<u> </u>	
Display show	s the Software Version		<u> </u>	
Display show	s LED TEST followed by tes	t patterns		
Display show	s HORNTEST and horn beep	s twice		
Display show	s SELFTEST			
	s STANDBY and backflush			
Display show	vs READY within 30 minutes	after startup		
	rd Time			
Display goes	blank approx. 15 seconds after	er READY		
Tagtod by:	44)		Date	3/30/98
Loctor hill				

Detector S/N 980206 - 4	Date:	0-98	
Software Ver. 5.02 A -1	Time:	0	
Location: <u>CAM CLEAN ROOM</u>			•
1. Connect communications cable and beg			
A. Record datafile name (Attach copy of data with to			
B. Use menu to turn on display	(optional)		
2. "H" Simulant Test			
C. Alarm response		<u>Pass</u>	<u>Fail</u>
Challenge Timesec		N/A	
Time to Alarm sec		N/A	
Horn Sounds Display correctly identifies Bli	ster (Note 1)	~	
Record response(s)	1 LOW		
BLS	5 MED		
Cleardown less than 5 minutes Record cleardown time	after alarm		
Note 1 - Detector must alarm e	either BLS or BLS/N	RV	
3. "G" Simulant Test			
D. Alarm response		Pass	Fail
Challenge Timesec		N/A	
Time to Alarmsec		N/A	
Horn Sounds		<u></u>	
Display correctly identifies Ne	rve (Note 2)	V	
Record response(s) NKV BLS	LOW		
Cleardown less than 5 minutes Record cleardown time	after alarm		
Note 2 - Detector must alarm	either NRV or NRV/	BLS	
Tested by: Hweny	Date	3/30/	98

H/G Simulant Test Data Sheet

Detector S/N 980206 - 4	Date: _	3-30	-98	
Software Ver 5.02A - 1	Time: _	3	15:30	
Location: CAM CLEAN ROOM				
Connect communications cable and be	egin "Logall'	,	5163.	
A. Record datafile name 4F01 (Attach copy of data with test reco				
B. Use menu to turn on display (opti	ional)			
2. "H" Simulant Test				
C. Challenge detector for 10 second	ls using CAM	1 "H" Sim		
D. Alarm response			Pass	<u>Fail</u>
Challenge Timesec	;	•	N/A	
Time to Alarm4sec	,		N/A	
Horn Sounds				
Display correctly identifies Bliste				
Record response(s) BLS	MED			
Cleardown less than 5 minutes after Record cleardown time				
Note 1 Detector must alarm either	BLS or BLS	S/NRV		
3. "G" Simulant Test				
E. Challenge detector for 10 second	s using CAM	1 "H" Simi	ılant generat	or (7 bars)
F. Alarm response			Pass	Fail
Challenge Time5sec			N/A	
Time to Alarm 5 sec			N/A	
Horn Sounds				
Display correctly identifies Nerve	(Note 2)		~	
Record response(s) _NRV				
Cleardown less than 5 minutes aft	er alarm			
Record cleardown timeO: 41				
Note 2 Detector must alarm		or NRV/B	LS	
Tested by: Me Thang	D	Oate	3-3	0-98

Detector S/N	980206-4	Date: _	3/31/48	
Software Ver	5.02A-1	Time: _	8:38	
Location:	EVC - 001	-4	ی ^{پر}	
1. Initial Pow	er On			
A.	Uncap the air inlet and air e	xhaust. Pla	ce charcoal filter o	ver the inlet.
B.	Connect communication cal	ole and begi	n "Logall" file.	46021.DAT
C.	Turn horn volume to full (cl	ockwise)		
D.	Connect power and begin st	opwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display shows				
Display shows	s the Software Version		<u>/</u> _/	
Display shows	LED TEST followed by test	patterns		
Display shows	HORNTEST and horn beep	s twice		
Display shows	SELFTEST			
Display shows	STANDBY and backflush b	egins		
Display shows	READY within 30 minutes	after startup		
Record	Time		-	
Display goes b	olank approx. 15 seconds afte	r READY		
Tested by:	Sen hon		Date	1/21/98

Detector S/N	1 980206 -4	Date:	3/31/98	
Software Ve	r. 502A-1	Time:	8:58	
Location: _	EVC-001		-4000	
1. Connect	communications cable and begin	"Logall"		
A.	Record datafile name 46 (Attach copy of data with test		<u> </u>	
B.	Use menu to turn on display (optional)		
2. "H" Simi	ılant Test			
C	Alarm response Challenge Time 2 sec		<u>Pass</u> N/A N/A	<u>Fail</u>
H	ime to Alarm 6 sec Horn Sounds Display correctly identifies Bliste		N/A	
	Record response(s) <u>RLS</u> M Cleardown less than 5 minutes aft Record cleardown time <u>2</u> : Note 1 - Detector must alarm eith	ter alarm	I SAIDV	
N 3. "G" Simi		lei BLS of B.	L5/14ICV	
D. A C T H	Alarm response Challenge Time sec Time to Alarm sec Horn Sounds Display correctly identifies Nerve Record response(s) NRVM		Pass N/A N/A	Fail
•	Cleardown less than 5 minutes aft Record cleardown time	47		
N Tested by: _	Hey Ly	her NRV or N Date	<u> </u>	198

Detector S	N 980206-04 Da	te:	3-31-98	
Software V	Ver. <u>5.02 A - 1</u> Tin	ne:	16:30	
Location:	EVC- 001			
1.6		a ca 11''		
1. Connec	et communications cable and begin "L			
A.	Record datafile name		<u>/</u>	
B.	Use menu to turn on display (opti	ional)		
2. "H" Sir	nulant Test			
C.	Alarm response		<u>Pass</u>	<u>Fail</u>
	Challenge Timesec		N/A	
	Time to Alarm sec		N/A	
	Horn Sounds			
	Display correctly identifies Blister (N			
	Record response(s) 823 ME	2		
	Cleardown less than 5 minutes after a Record cleardown time o: 35			
	Note 1 - Detector must alarm either	BLS or E	BLS/NRV	
3. "G" Sir	nulant Test			
D	Alarm response		Pass	Fail
υ.	Challenge Time/_sec		N/A	
	Time to Alarm 4 sec		N/A	
	Horn Sounds		~	
	Display correctly identifies Nerve (N	ote 2)		
	Record response(s) NRV M	ED		
	Cleardown less than 5 minutes after a Record cleardown time			
	Note 2 - Detector must alarm either	NRV or	NRV/BLS	
Tested by:	MEDensey	Date	3-3	1-98

Detector S/N 980206-4	Date:	4-1-	98	
Software Ver. 5.02A-1	Time:	8:35		
Location: EVC-001				
Connect communications cable ar	nd begin "Logal]"		
			_	
A. Record datafile name (Attach copy of data v				
B. Use menu to turn on d	isplay (optional	1)		
2. "H" Simulant Test				
C. Alarm response			<u>Pass</u>	<u>Fail</u>
Challenge Time	sec		N/A	
Time to Alarm 4	_sec		N/A	
Horn Sounds				
Display correctly identifie	s Blister (Note	1)		
Record response(s)				
	BLS MED			
Cleardown less than 5 mir Record cleardown time				
Note 1 - Detector must al	arm either BLS	or BLS/NR	V	
3. "G" Simulant Test				
D. Al			Pass	Fail
D. Alarm response Challenge Time	sec		N/A	
Time to Alarm3			N/A	
Horn Sounds	_500			
Display correctly identifie	s Nerve (Note 2	2)		
Record response(s)				
		•		
Cleardown less than 5 mir Record cleardown time	O:23	1		
Note 2 - Detector must al	arm either NRV	or NRV/B	LS	
Tested by:		Date	4-1-	-98

Detector S/N 980206 - 4 Date: 4-1-	98	
Detector S/N $980206-4$ Date: $4-1-$ Software Ver. $5.02A-1$ Time: 15	:00	
Location: <u>CAM CLEAN ROOM</u>	FOLLOWING	LOW-TEMP
1. Connect communications cable and begin "Logall"	TESTI	~ €. `
A. Record datafile name <u>4M029. DAT</u> (Attach copy of data with test records)		5 15:10
B. Use menu to turn on display (optional)		R-AIR H
2. "H" Simulant Test		4
C. Alarm response Challenge Time/sec Time to Alarm7sec Horn Sounds Display correctly identifies Blister (Note 1) Record response(s)	Pass N/A N/A	<u>Fail</u>
D. Alarm response Challenge Time/sec Time to Alarm3sec Horn Sounds Display correctly identifies Nerve (Note 2)	Pass N/A N/A	Fail
Cleardown less than 5 minutes after alarm Record cleardown time Note 2 - Detector must alarm either NRV or NRV/ Tested by: Date	BLS 4-1-	98

Detector S/N	980206-4	Date:	3-22-78	
	5.028-1	Time:	16:17	
Location: <u></u>	AM CLEAN			
1. Initial Powe	er On			
A.	Uncap the air inlet and	air exhaust. Plac	e charcoal filter o	ver the inlet.
B.	Connect communication	n cable and begin	n "Logall" file.	
	Record datafile name _ (Attach copy of data wi	4_0522 A th test records)	. DAT	
C.	Turn horn volume to fu	ll (clockwise)		
D.	Connect power and beg	in stopwatch.		
E.	Verify startup sequence	. .		
			Pass	Fail
Display shows	M43-APD		~	
Display shows	the Software Version		1	
Display shows	LED TEST followed by	y test patterns	~	
Display shows	HORNTEST and horn	beeps twice	<u>/</u>	
Display shows	SELFTEST			
Display shows	STANDBY and backfl	ush begins		
Display shows	READY within 30 mir	nutes after startup		
Record	Time <u>2 3 8</u>	, "	- /	
Display goes l	blank approx. 15 second	s after READY		
	9/9)		Date	5-22-98

Detector S/N _ 980206 - 4	Date: 5-22-98
Software Ver5.02 A - 1	Time:
Location: CAM CLEAN	

- 1. Connect communications cable and begin "Logall"
 - A. Record datafile name 4_0522 A. DAT

 (Attach copy of data with test records)
 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	5		
Challenge time (sec)	1		
Time to alarm (sec)	4		
Horn sounds	Passy Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass)/ Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes	Pass/ Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)	0:49		
Record cleardown time	57.68		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	7	·	
Challenge time (sec)	1		
Time to alarm (sec)	8		- (5.7)
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	Pass Fail	Pass / Fail	Pass / Fail
Record response(s)	NRVL)M H	NRV L M H	NRV L M H
According to the control of the cont	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass/Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:35		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Mary Date 5-22-98

Form M43-DVT-002

Rev A (May 19, 1998)

H/G Simulant Test Data Sheet

Detector S/N	980206-4		5-22-98	
Software Ver.	5.02B-1	Time:	16:28	
Boltware ver	CAM CLEAN			
Location:	CAM CLEAN	,		
1. Connect cor	nmunications cable and begin	n "Logall"		
A. Record (Attach	datafile namecopy of data with test record	s)		
	nu to turn on display (option			
2. "H" Simular				
C. Challer	nge detector for 10 seconds u	sing CAM "	'H" Simulant generat	or (7 bars)
D. Alarm			<u>Pass</u>	<u>Fail</u>
Challen	age Time 3 sec		N/A	
Time to	Alarmsec		N/A	
Horn Se				
Display	correctly identifies Blister (Note 1)		
Reco	ord response(s)BL3_M	ED		•
	own less than 5 minutes after			
Reco	ord cleardown time0:2	_ 3		
Note 1 1	Detector must alarm either B	LS or BLS/N	IRV	
3. "G" Simula	nt Test			
E. Challe	nge detector for 10 seconds u	ising CAM '	"H" Simulant genera	tor (7 bars)
F. Alarm	*agnange		Pass	Fail
	nge Time3sec		N/A	
Time to	o Alarm sec		N/A	
Horn S				
	y correctly identifies Nerve (Note 2)		
Display	ord response(s) <u>BL3 L00</u>	~		
Reco	NRV M	ED		
Cleard	own less than 5 minutes after			
	ord cleardown time			
Note 2	Detector must alarm eithe	r NRV or NF	RV/BLS	
Tested by:	Hen Eleans	Dat	te <u>5-2</u>	2-98

Form M43-DVT-003

Rev A (May 19, 1998)

Detector S/N	780206-9 I	Jate:	~ 0	
Software Ver.	5,02B-1	Time:	1.57	
Location:	VC POOL 0277			
1. Initial Powe	er On			
A.	Uncap the air inlet and air exha	aust. Place cha	rcoal filter over	er the inlet.
B.	Connect communication cable	and begin "Lo	gall" file.	
	Record datafile name 4/2 c (Attach copy of data with test r		τ	
C.	Turn horn volume to full (clock	kwise)		
D.	Connect power and begin stop	watch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	s M43-APD		~	
Display show	s the Software Version		<u>/</u>	
Display show	s LED TEST followed by test pa	atterns		
Display show	s HORNTEST and horn beeps t	wice		·
Display show	s SELFTEST			
Display show	s STANDBY and backflush beg	gins	<u></u>	
Display show	s READY within 30 minutes af	ter startup		
Recor	d Time 2'37			
Display goes	blank approx. 15 seconds after	READY		
Tested by:	Me to to con	<u>~</u>	Date	5-26-98

Detector S/N 980206 - 4 Date: 5

Date: 5-26-98

Software Ver. 5.02B-1

Time: 8:57

Location: EVC POOL 0277

- 1. Connect communications cable and begin "Logall"
 - A. Record datafile name 4-0526 A. DAT

 (Attach copy of data with test records)
 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	5'	12'	20'
Challenge time (sec)	4"	4"	4"
Time to alarm (sec)			4"
Horn sounds	Pass / Fail	Pass / Fail	Pass/Fail
Display correctly identifies Blister	Pass / Fail	Pass / Fail	Pass/Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H	NRV L M H
	BLS L M H	BLS L M H	BLSQ M H
Cleardown less than 5 minutes	Pass / Fail	Pass / Fail	Pass/ Fail
after alarm (mm:ss)			,
Record cleardown time			20"

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed since power on (min)	time 9'	·	
Challenge time (sec)	1"		
Time to alarm (sec)	6"		
Horn sounds	Pass / Fail	Pass / Fail	Pass / Fail
Display correctly identifies h	Nerve Pass/Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	(NRV L M H	NRV L M H	NRV L M H
	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minut	tes Pass / Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:19"		
	A A ATOTT ATOTT	ADT C	

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Le to lary

Date

5-26-98

Detector S/N	980206-4	Date:	5-26-98	
Software Ver.	5.028-1	Time: _	13:16	

- 1. Connect communications cable and begin "Logall"
 - A. Record datafile name 4_0526 D. DAT

 (Attach copy of data with test records)
 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	N/A		
Challenge time (sec)	1		
Time to alarm (sec)	_3		75.1
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes	Pass/Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:21		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	N/A		
-			
Challenge time (sec)			
Time to alarm (sec)	5		D /D 11
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	Pass/Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	(NRY L M) H	NRV L M H	NRV L M H
Kecora response(s)	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass/ Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:24		
	1.1 NDX7 NDX7	/DT C	

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Me Date 5-26-98

Form M43-DVT-002

Rev A (May 19, 1998)

Detector S/N 980206-5 Date: 3-24-9	8
Software Ver	
Location: CAM CLEW ROOM	
1. Initial Power On	
A. Uncap the air inlet and air exhaust. Place charcoal filt	er over the inlet.
B. Connect communication cable and begin "Logall" file	5 A 001. DAT
C. Turn horn volume to full (clockwise)	
D. Connect power and begin stopwatch.	
E. Verify startup sequence.	
Pass	Fail
Display shows M43-APD	
Display shows the Software Version	
Display shows LED TEST followed by test patterns	
Display shows HORNTEST and horn beeps twice	
Display shows SELFTEST	
Display shows STANDBY and backflush begins	
Display shows READY within 30 minutes after startup	
Record Time 2:39	
Display goes blank approx. 15 seconds after READY	
Tested by: Date	3-24-98

Detector S/N 980206-5 Date: 3	-24-98
Software Ver So2 - I Time:	18: ZS
Location: CAM CLEANROOM	
1. Connect communications cable and begin "Logall"	
A. Record datafile name <u>SAOO1. D</u> (Attach copy of data with test records)	1.1 E-110
B. Use menu to turn on display (optional)	5A002. SIG F-AMC H 1SEC
2. "H" Simulant Test	4 I SEC
C. Alarm response	Pass <u>Fail</u>
Challenge Time sec	N/A
Time to Alarm4sec	N/A
Horn Sounds	<u> </u>
Display correctly identifies Blister (Note 1)	
Record response(s) REST MED A 3-24-95 NERY 2000	
Cleardown less than 5 minutes after alarm Record cleardown time 42 SEC	
Note 1 Detector must alarm either BLS or	BLS/NRV
3. "G" Simulant Test	
	Pass Fail
D. Alarm response	N/A
Challenge Time/sec	N/A
Time to Alarmsec	
Horn Sounds	
Display correctly identifies Nerve (Note 2) Record response(s) Nerv Low	
Record response(s)	
Cleardown less than 5 minutes after alarm Record cleardown time	
Note 2 Detector must alarm either NRV	or NRV/BLS
Tested by:D	ate <u>3-24-98</u>

H/G Simulant Test Data Sheet

Detector S/N _	980206-5	Date: _	3-24	-98	
Software Ver.	502-1	Time: _	18: 7	28	
Location: <u>A</u>	M CLEAN ROOM		•		
1. Connect com	munications cable and be	gin "Logall	,,		
	atafile name5 A				R-AIR
(Attach c	opy of data with test reco	rds)	. 5	A003,51	E-THAIRE
B. Use mem	u to turn on display (optio	onal)	(M	DNITOR	H 10 35C
2. "H" Simulant	Test		/	Nova)	R-AIR H 10 SEC G 10 SEC
C. Challeng	ge detector for 10 seconds	using CAN	M "H" Simu	ılant generato	or (7 bars)
D. Alarm re	sponse			Pass	<u>Fail</u>
Challeng	e Timesec			N/A	
Time to A	Alarm 7 sec			N/A	
Horn Sou					
	correctly identifies Blister				
Record	response(s)	MED			
Cleardow Record clea	on less than 5 minutes after down time29	er alarm			
Note 1 De	etector must alarm either	BLS or BL	S/NRV		•
3. "G" Simulant	Test				
E. Challeng	ge detector for 10 seconds	s using CAN	M "H" Sim	ulant generat	or (7 bars)
F. Alarm re	sponse			Pass	Fail
	e Timesec			N/A	
_	Alarmsec			N/A	
Horn Son					
Display o	correctly identifies Nerve	(Note 2)			
Record	d response(s) NERUME	ED			
		1			
Cleardov	vn less than 5 minutes after down time29	er alarm			
			z ND37/Ď	T C	
Note	2 Detector must alarm	either NK V	OF NKV/D	LS .	
Tested by:	<u></u>		Date	3-2	4-98
Form M43-DVT	°-003			Rev 0 (Ma	rch 24, 1998)

Detector S/N 980206-5	Date: 3-25-98
Software Ver. <u>5.02A-1</u>	Time: (2)09:37
Location: <u>EVC - 001</u>	STARTUP @ -40°C
1 Initial Power On	

- Uncap the air inlet and air exhaust. Place charcoal filter over the inlet. A.
- Connect communication cable and begin "Logall" file. 5 B 004. DAT B.
- Turn horn volume to full (clockwise) C.
- Connect power and begin stopwatch. D.
- Verify startup sequence. E.

	Pass	Fail
Display shows M43-APD	<u> </u>	
Display shows the Software Version		
Display shows LED TEST followed by test patterns	<u> </u>	
Display shows HORNTEST and horn beeps twice		
Display shows SELFTEST		
Display shows STANDBY and backflush begins		
Display shows READY within 30 minutes after startup		
Record Time 2:46		
Display goes blank approx. 15 seconds after READY		

Date

Detector S/N	980206-5	Date: _	3-25-98	2
Software Ver	5.02 A-1	Time: _		
Location: _	EVC - 001		STARTUP	@ -4000
1. Connect c	ommunications cable and beg		_	·
A.	Record datafile name(Attach copy of data with te	SBOOS est records)	<u>58004.</u>	DAT F-AIR
B.	Use menu to turn on display	(optional))1 4 3 :	H
2. "H" Simu	lant Test			
C. A	larm response		Pass	<u>Fail</u>
C	hallenge Time <u>i</u> sec		N/A	
T	ime to Alarm & sec		N/A	
	orn Sounds	07 . 1		
D	isplay correctly identifies Blis	ster (Note 1)	
	Record response(s) <u>RLS</u>	Low		
C	leardown less than 5 minutes Record cleardown time2	after alarm		
N	ote 1 Detector must alarm e	either BLS	or BLS/NRV	
3. "G" Simu	lant Test			
5 4	1		Pass	Fail
	larm response hallenge Time sec		N/A	•
	ime to Alarm sec		N/A	
_	Iorn Sounds		\checkmark	<u> </u>
	oisplay correctly identifies Ne	rve (Note 2)		
D	Record response(s) NRV	Low		
	Record response(s)			
C	Cleardown less than 5 minutes Record cleardown time	after alarm		
N	lote 2 Detector must alarm	either NRV	or NRV/BLS	
Tested by: _	Al Wear	I	Date	3-25-98

Detector S/N	980206-5	Date: _	3 - 2	25-98		
Software Ver.	5.02A-1	Time: _	17:3	7	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Location:	EVC -001	Rux	INING	4 HRS	@ -30°	<
1. Connect co	ommunications cable and				(,45.	
A.	Record datafile name (Attach copy of data w	5 C 007.		5143	5 COO8.	5 I
B.	Use menu to turn on di	isplay (optional)			,	1
2. "H" Simul	ant Test					k
C. Al	arm response			<u>Pass</u>	<u>Fail</u>	
Ch	nallenge Time	sec		N/A		
		sec		N/A		
	orn Sounds					
Di	splay correctly identifies	s Blister (Note 1)			
	Record response(s) B					
Cl	eardown less than 5 min Record cleardown time					
No	ote 1 Detector must al		or BLS/N	RV		
3. "G" Simul	ant Test					
D 41	larm response			Pass	Fail	
	nallenge Time	sec		N/A		
	me to Alarm	sec		N/A		
	orn Sounds	_				
	isplay correctly identifie Record response(s))			
C	leardown less than 5 min Record cleardown time	nutes after alarm				
N	ote 2 Detector must al	larm either NRV	or NRV	BLS		
Tested by:	Mle WWes		Date	3 - 2	25 -98	

Detector S/N	980206-5	Date: _	3-2	26-98	
Software Ver.	5.02A-1	Time:	13:37	<u></u>	
Location:	EVC-001				
1. Connect co	mmunications cable and be				
A.	Record datafile name(Attach copy of data with	5 DO10, test records)	DAT		
В.	Use menu to turn on displa	ay (optional)			
2. "H" Simula	ant Test				
C. Ala Ch Tir Ho Dis	arm response allenge Timesec ne to Alarm sec orn Sounds splay correctly identifies Bl Record response(s)	ister (Note 1)] -	Pass N/A N/A	<u>Fail</u>
	eardown less than 5 minute Record cleardown time ate 1 Detector must alarm	/!00	or BLS/NRV		
		Citie DES	7 555/112		
3. "G" Simul	ant lest				
Ch Ti	arm response nallenge Time			Pass N/A N/A	Fail
Di	splay correctly identifies N Record response(s) NR ILS	Low)		
	eardown less than 5 minute Record cleardown time ote 2 Detector must alarm	1100	or NRV/BI	LS	
Tested by:			Date	3-6-	- 98

Detector S/N	980206-5	Date:3	-27-98	•
Software Ver.	5.02A-1	Time:	9:30	
Location:	CAM CLEAN ROSE			
1. Initial Pow	er On			
A.	Uncap the air inlet and air ex	xhaust. Place c	harcoal filter	over the inlet.
B.	Connect communication cal	ole and begin "I	Logall" file.	SEOIS. DAT
C.	Turn horn volume to full (cl	ockwise)		
D.	Connect power and begin st	opwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	vs M43-APD		~	
-	s the Software Version			
	vs LED TEST followed by tes	t patterns		
Display shows HORNTEST and horn beeps twice				
_	vs SELFTEST			
-	vs STANDBY and backflush	begins		
_	vs READY within 30 minutes			
Reco	rd Time 2:29			
Display goes	s blank approx. 15 seconds aft	er READY		
Tasted by	Ml Elem		Date	3-27-98

Detector S	N 980206-5	Date:	3-27-98	
Software \	Ver. <u>5.02A - 1</u>	Time:	9:40	
Location:	CAM CLEAN ROOM			
1. Connec	et communications cable and begin	"Logall"		
A.	Record datafile name	E015.DA	Τ	
B.	Use menu to turn on display (optional)		
2. "H" Sir	nulant Test			
C.	Alarm response		<u>Pass</u>	<u>Fail</u>
0.	Challenge Time/_sec		N/A	
	Time to Alarm3sec		N/A	
	Horn Sounds		~	
	Display correctly identifies Bliste	r (Note 1)		
	Record response(s)	LOW		
	Cleardown less than 5 minutes af Record cleardown time 0:40			
	Note 1 Detector must alarm eit	her BLS or I	BLS/NRV	
3. "G" Sin	nulant Test			
_			Pass	Fail
D.	Alarm response		N/A	1 411
	Challenge Time sec		N/A	
	Time to Alarm sec		14/21	
	Horn Sounds	Note 2)		
	Display correctly identifies Nerve			
	Record response(s)	/ACD		
	Cleardown less than 5 minutes at Record cleardown time	ter alarm		
Note 2 Detector must alarm either NRV or NRV/BLS				
Tested by:	Ille W Wenny	_ Date	<u> 3-2</u>	7-98

	Startup Test Cheen			
Detector S/N	980206-5	Date:	1/31/58	
	S.024-1	Time:	9:00	
Location:	Thermotour- 257			
1. Initial Pow	ver On			
A.	Uncap the air inlet and air			
B.	Connect communication ca	able and begin "	'Logall" file.	56017.DAT
C.	Turn horn volume to full (o	clockwise)		
D.	Connect power and begin s	stopwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	ws M43-APD		<u> </u>	
Display show	ws the Software Version		<u> </u>	
Display show	ws LED TEST followed by te	est patterns	<u> </u>	-
Display shows HORNTEST and horn beeps twice				
	ws SELFTEST			
	ws STANDBY and backflush			
Display sho	ws READY within 30 minute	es after startup		
	ord Time			
Display goe	s blank approx. 15 seconds a	fter READY		
Tested by:			Date	3-31-98

Detector S/N	980206-5	Date:	5-22-9	<u> </u>
Software Ver.	5.028-1	Time:	17:30	
Location:	CAM CLEAN			
1. Initial Powe	er On			
A.	Uncap the air inlet and air ex	khaust. Plac	ce charcoal filter ov	ver the inlet.
В.	Connect communication cable and begin "Logall" file.			
	Record datafile name <u>S_0522A.DAT</u> (Attach copy of data with test records)			
C.	Turn horn volume to full (cl	ockwise)		
D.	Connect power and begin stopwatch.			
E.	Verify startup sequence.			
			Pass	Fail
Display shows	s M43-APD			
Display shows the Software Version				
Display shows LED TEST followed by test patterns				
Display shows HORNTEST and horn beeps twice				
Display shows SELFTEST				
Display show	s STANDBY and backflush b	pegins	_	
Display show	s READY within 30 minutes	after startuj	p	
Recore	d Time 3:22		- /	
Display goes	blank approx. 15 seconds after	r READY		
T lhor	40 4)		Date	5-23-98

Detector S/N 980206-5

Date: 5-22-98

Software Ver. <u>5.02B-1</u>

Location: CAM CLEAN

- 1. Connect communications cable and begin "Logall"

 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	5		
Challenge time (sec)	1		
Time to alarm (sec)	3		- (D :)
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass/ Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H (BL\$) L (M)H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:35		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	7		
Challenge time (sec)	/		
Time to alarm (sec)	5		7 /E-11
Horn sounds	Pass/Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	Pass/ Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	(NRV L M(H)	NRV L M H	NRV L M H
(c)	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	2:4/*		
Note 2 Detector must alarm e	ither NRV or NRV/	BLS * DETE	ECTOR RE-ALAR

Ma L) L) Car Date

APPAGE 26 SECONDS

5-22-98

Tested by:

H/G Simulant Test Data Sheet

	•	
Detector S/N 980206-5	Date:	
Software Ver. 5.028-1	Time:	42 Pm
Location: <u>CAM CLEAN</u>		
1. Connect communications cable and beg		
A. Record datafile name	<u>.2 A . DAT</u> is)	
B. Use menu to turn on display (option	nal)	
2. "H" Simulant Test		
C. Challenge detector for 10 seconds	using CAM "H" Simu	lant generator (7 bars)
D. Alarm response		<u>Pass</u> <u>Fail</u>
Challenge Time		N/A
Time to Alarm sec		N/A
Horn Sounds		
Display correctly identifies Blister	(Note 1)	
Record response(s) BLS M	ED_	
Record response(s)		
Cleardown less than 5 minutes afte	r alarm	
Record cleardown timeO:	23	
Record cleardown time		
Note 1 Detector must alarm either I	BLS or BLS/NRV	
3. "G" Simulant Test		
E. Challenge detector for 10 seconds	using CAM "H" Sim	ulant generator (7 bars)
T. Alama rosponse		Pass Fail
F. Alarm response Challenge Time6sec		N/A
Time to Alarm sec		N/A
Horn Sounds		
Display correctly identifies Nerve	(Note 2)	
Display correctly identifies New M	ED	
Record response(s) NRV M	06)	
Cleardown less than 5 minutes after		v
Record cleardown time	2:4/2	
Record cleardown time	.,,	
Note 2 Detector must alarm eith	er NRV or NRV/BLS	
Tested by: Me Color	Date	5-22-48

Form M43-DVT-003

Rev A (May 19, 1998)

Startup Test Checklist and Test Data Sheet

Detector S/N	980206-5	Date:	-26-98	
Software Ver	5.02B-1	Time:	8:40	
Location: <u>£</u>	VC POOL 0277	·		
1. Initial Pow	ver On			
A.	Uncap the air inlet and air e	xhaust. Place of	charcoal filter o	ver the inlet.
В.	Connect communication can Record datafile name (Attach copy of data with to	. Blu 5_0.	Logall" file. <u>526A</u> .DA	T
C.	Turn horn volume to full (c	elockwise)		
D.	Connect power and begin s	topwatch.		
E.	Verify startup sequence.			
			Pass	Fail
-	vs M43-APD			
	vs the Software Version			
Display show	ws LED TEST followed by te	st patterns		
Display show	ws HORNTEST and horn bee	ps twice		
Display show	ws SELFTEST			
Display show	ws STANDBY and backflush	begins		
Display show	ws READY within 30 minute	es after startup		-
Reco	ord Time 4:50		/	
Display goe	s blank approx. 15 seconds at	fter READY		
m 4.1h	Me Santo		Date	5-26-98

Detector S/N 980206 - 5

Date: 5-26-98

Software Ver. <u>5.028-1</u>

Time: 8:47

Location: EVC POOL 0277

- 1. Connect communications cable and begin "Logall"
 - A. Record datafile name 5_0526A. DAT

 (Attach copy of data with test records)
 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	フ '	12'	
Challenge time (sec)	4"	i"	
Time to alarm (sec)		3"	
Horn sounds	Pass / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass / Fail	(Pass) / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H	NRV L M H
(Coold Tosponso(s)	BLS L M H	BLS M H	BLS L M H
Cleardown less than 5 minutes	Pass / Fail	Pass Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time		20"	
	DIC - DICA	TD X/	

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

O Silitarant Test			
Startup testing only: elapsed time since power on (min)	10'		
Challenge time (sec)	1		
Time to alarm (sec)	7	Pass / Fail	Pass / Fail
Horn sounds	Pass/Fail		
Display correctly identifies Nerve	Pass/Fail	Pass / Fail	Pass / Fail
(Note 1)			NRV L M H
Record response(s)	NRV L M H	NRV L M H	-
10001a 100pains (-)	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	(Pass) Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)	- //		
Record cleardown time	4/	TO C	

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by:

Date

5-26-98

Detector S/N	980206-5	Date:	5-26-98
Software Ver.	5.028-1	Time:	13:28

Location: EVC Pool 0277

- 1. Connect communications cable and begin "Logall"

 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	N/A		
Challenge time (sec)	į		
Time to alarm (sec)	4		
Horn sounds	(Pass) Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	Pass / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:28		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time	NA		
since power on (min)	////		
Challenge time (sec)	/		
Time to alarm (sec)	フ		
Horn sounds	Pass/Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	Pass Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	(NRY L'M) H	NRV L M H	NRV L M H
The state of the s	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass / Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	1:04		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Date 5-26-98

Form M43-DVT-002

Rev A (May 19, 1998)

Blank

APPENDIX B. GOVERNMENT EVALUATION TEST DATA: AGENT VAPOR

Blank

Notes																																					
Clear Time	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00.00.00	00.00.00	00:00:00	00:00:00	00:00:00	00:00:00	00:01:54	#VALUE!	00:00:37	00:00:00	00:00:47	########	00:00:00	00:00:00	06:00:00	00.00.30	00:00:33	00.00.30	00:00:00	00:00:30	00:00:18	00:00:30	00:00:30	00:00:29	00:00:29	00:00:31	00:00:19	00:00:22	00:00:50	00:00:24	00:00:19
Alarm	########	########	########	########	#########	#########	#######################################	***************************************		#######################################	#######	########	00:01:13	#VALUE!	00:00:10	#########	00:00:20	00:00:40	#########	#######################################	00.00	00.00.32	00:00:13	00.00	00.00.00	00:00:10	00:00:23	00:00:15	00:00:25	00:00:13	00:00:34	00:00:14	00:00:50	00:00:18	00:00:17	00:00:20	00:00:12
Cond	00:02:00	14:55:05	00:00:57	00:01:51	00:01:29	00:01:38	00.01.17	00.01.00	00:01:23	00:01:06	00:02:09	00:01:45	00:01:07	00:01:45	00:02:06	00:01:15	00:02:24	00:00:10	00:03:04	00:01:40	00:04	00.01.47	00:00:00	00.00.43	00.01.08	00:01:24	00:01:41	00:02:10	00:02:15	00:01:06	00:01:35	00:01:39	00:00:58	00:00:42	00:00:11	00:00:20	00:00:12
Resp							No alarm	No alarm	No alarm	No alarm	No alarm	No alarm	Alarm		Alarm	No Alarm	Alarm		No Alarm	No Alarm	Alorm	Yall V	Alarm	Alarm	Nerve low	Nerve low	Nerve low										
Clear													14:41:29		15:07:54		15:32:07				00.48.40	_	-	10.18.07	+	_	13:20:45	13:46:44	14:19:47	14:33:33	14:53:00	15:05:47	_	-	_		10:26:05
Afarm													14:39:35		15:07:17			15:33:45			00:47:40	-	-	10.00.42	+-	+-	13:20:26	13:46:14	14:19:17	14:33:04	-	15:05:15	-	-	-+		10:25:46
On Agent	14:50:51	14:55:05	14:57:12	15:16:16		15:21:38	09:34:38	1				11:08:02	14:38:23		15:07:07				15:38:00	15:44:01	00:47:00			10.00.23					14:18:52	14:32:51	14:51:58	15:05:02		-	\rightarrow	_	10:25:29
On Cond	14:45:51		14:56:14	15:14:25	15:17:23	15:20:00	09:33:21	00.46.06	10:14:12	10:27:36	10:52:26	11:06:18	14:37:15	14:42:20	15:05:01	15:24:39	15:28:36	15:32:55	15:34:57	15:42:21	46.24	09.13.21	09:32:35	10.44.00	10.20.53	10:42:36	13:18:21	13:43:49	14:16:38	14:31:45	14:50:22	15:03:23	09:15:55	09:30:13	09:53:51	10:06:10	10:25:17
Det #	-	-	-	7	7	2	-	٠ ,	٠ -	7	-	7	-	7	~	7	_	_	7	2		- (Ν τ	- c	1 -	- 2	-	7	~	7	-	7	1	7	τ-	7	~
Temp	20	20	20	20	20	20	20	2 6	20 20	20	20	20	20	20	20	20	20	20	20	20	6	8 8	50	9 8	2 6	20 2	20	20	20	20	20	20	20	20	50	20	20
₩.	%0	%0	%0	%0	%0	%0	06	8 8	8 6	06	90	8	90	6	06	06	06	06	06	90	c	7 (~ ~	7 (4 0	1 6	92	92	92	92	92	92	3	က	က	က	က
Conc (ug/l)	0.091	0.091	0.091	0.091	0.091	0.091	0.122	0 122	0.13	0.13	0.122	0.122	1.017	1.017	-	-	-	-	-	1	0.404	00	0.104	0.13	2.5	0.116	0.14	0.14	0.111	0.111	0.119	0.119	0.099	0.099	0.113	0.113	0.117
Agent	GD	GD	GD	G	G	GD	G.	ב פ	9 6	9	GD	GD	GD	СD	GD	GD	СD	GD	GD	GD	3	¥ ;	y g	4 5	5 6	5 6	GA GA	GA	GA	GA GA	GA	GA	GB	GB	GB	GB	GB
Date	86/2/8	8/3/88	86/8/8	8/3/88	8/3/88	8/3/88	8/4/98	8/4/08	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	001.110	8/2/8	8/2/98	8/2/8	9/5/09	8/2/98	8/2/8	8/2/8	8/2/8	8/2/8	8/2/8	8/2/8	86/9/8	86/9/8	86/9/8	8/9/8	86/9/8

		I																																	ı					
Notes																							Realrmed			Realrmed														
Clear	Time	00:00:19	00:00:50	00:00:19	00:00:20	00:00:19	00:00:19	00:00:19		00:00:30	00:00:29	00:00:29	00:00:26	00:00:29	00:00:27	00:00:29	00:00:30	00:00:29	00:00:29	00:00:29	00:00:26	00:01:10	00:01:03	00:01:07	00:00:57	00:01:30	00:00:28	00:00:44	00:00	00:00:00	00:00:21	00:00:56	00:00:25	00:00:23	00:00:00	00:00:50	00:00:18	00:00:25	00:00:23	00:00:30
Alarm	emi	00:00:18	00:00:16	00:00:18	00:00:20	00:00:18	00:00:15	00:00:17		90:00:00	00:00:00	00:00:04	00:00:00	90:00:00	60:00:00	20:00:00	00:00:00	00:00:00	00:00:08	00:00:04	00:00:04	00:00:02	20:00:00	90:00:00	00:00:02	90:00:00	00:00:00	70.00	00.01.48	#######################################	00:00:25	00:00:55	00:00:10	00:00:13	#######################################	00:01:16	00:00:38	60:00:00	00:00:12	00:00:02
Cond	- III e	00:00:11	00:00:57	00:00:45	00:00:49	00:00:57	00:00:04	00:00:19		00:00:32	00:01:47	00:00:58	00:01:05	00:01:01	00:00:43	00:01:16	00:01:05	00:00:31	00:00:34	00:01:13	00:00:29	00:00:42	00:00:42	00:00:34	00:00:35	00:00:28	00:01:06	08-30-54	00.00	00:00:53	00:01:02	00:00:32	00:00:26	00:00:35	00:01:01	00:00:53	00:00:57	00:00:23	00:00:57	00:01:10
Resp		Nerve low		BLS LOW	BLS LOW	BLS LOW	Mondo low	Nerve low		Nerve low	VX L*	VX L*7	Nerve low	no alarm	Nerve low		14:27:19 Nerve low	Nerve low																						
Clear		10:38:36	13:25:32				14:23:52	14:34:57		-	09:00:25	09:19:40	_	09:55:25	10:06:26	10:51:25	11:08:24	11:30:50	11:44:38	12:01:22	T	14:04:02	14:17:57	14:41:43	14:56:00	15:15:24	15:24:49	08-41-32	09.01.38		10:16:03	10:27:42	10:52:52	11:17:22		12:54:24	13:28:10	-	14:42:23	
Alarm		10:38:17	13:25:13	13:36:13	14:00:18	14:12:17	14:23:32	14:34:38		08:50:57	08:59:56	09:19:11	09:37:26	09:54:56	10:05:59	10:50:56	11:07:55	11:30:21	11:44:09	12:00:54	12:12:52	14:02:52	14:16:54	14:40:36	14:55:03	15:13:53	15:23:51	08-41-21	09.01-12		10:15:42	10:27:17	10:52:27	11:16:59		12:54:03	13:27:52	14:26:55	14:42:00	15:04:30
ő	Agent	10:37:59	13:24:57	13:35:56	13:59:58	14:11:59	14:23:17	14:34:21			08:59:53	09:19:07		09:54:50	10:05:50	10:50:49	11:07:48	11:30:17	11:44:01	12:00:49	12:12:48	14:02:47	14:16:46	14:40:30	14:55:00	15:13:48	15:23:47	08.30.54	08.59.23	09:47:46	10:15:17	10:26:22	10:52:18	11:16:46	12:32:41	12:52:47	13:27:14	14:26:46	I	15:04:28
u S	Duo	10:37:47	13:24:00	13:35:11	13:59:09	14:11:02	14:23:13	14:34:02		08:50:19	08:58:06	09:18:09	09:36:18	09:53:49	10:05:07	10:49:32	11:06:42	11:29:47	11:43:27	11:59:36	12:11:48	14:02:05	14:16:04	14:39:56	14:54:25	15:12:49	15:22:42		08-58-21	09:46:53	10:14:15	10:25:49	10:51:22	11:16:11	12:31:40	12:51:55	13:26:17	14:26:23	14:40:50	15:03:19
Det#		2	_	7	_	7	-	2		1	7	-	7	-	2	-	7	+	2	-	2	-	2	-	7	-	2	4	٠ ,	· -	8	-	-	2	-	7	-	-	7	-
Temp		20	20	20	20	20	20	20		20	70	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	2 5	70	20	20	20	20	20	20	20	20	20	20
RH		က	06	8	8	06	6	90	ľ	က	က	က	က	က	3	88	88	88	88	88	88	က	က	က	က	က	က	c	o cc	က	က	က	က	3	90	06	90	06	06	90
Conc	(ußn)	0.117	0.108	0.108	0.109	0.109	0.114	0.114		1.933	1.933	2.12	2.12	2.047	2.047	2.197	2.197	2.154	2.154	2.258	2.258	36	36	34	34	52.917	52.917	2	۰ ،	~	0.058	0.058	0.15	0.15	0.29	0.11	0.1	0.1	0.31	0.31
Agent		GB	GB	eg GB	GB	GB	GB	GB		皇	무	9	무	오	모	유	유	모	오	웃	日	모	욷	모	욷	웃	HD	×	: ×	×	×	×	×	×	X	×	š	š	š	š
Date		86/9/8	86/9/8	86/9/8	86/9/8	86/9/8	86/9/8	8/9/8		8/1/8	8/1/8	8/2/8	86/2/8	8/1/8	8/2/8	86/2/8	8/1/8	8/1/98	8/1/8	8/1/8	8/1/8	8/1/98	8/1/8	8/1/8	8/1/8	8/1/8	8/1/98	8/8/98	8/8/88	8/8/8	8/8/8	86/8/8	8/8/8	8/8/88	8/8/8	8/8/88	8/8/88	8/8/88	8/8/88	8/8/8

Notes				peak below edge		detector alarmed																														
Clear	00:00:24	00:00:00	00:00:00	00:00:00	00:00:22	00:00:00	00:00:24	00:00:23	00:00:22	00:00:20	00.00	00:00:25	00:00:25	00:00:33	00:00:24	00:00:25	00:00:24	00:00:50	00:00:21	00:00:50	00:00:23	00:00:50	00:00:20	00:00:20	00:00:50	00:00:50	00:00:50	00:00:20	00:00:21	00:00:00	00:00:20	00:00:23	00:00:21	66.00.00	00:00:23	00:00:23
Alam	00:00:15	#######################################	########	#######################################	80:00:00	#######	00:00:02	00:00:12	90:00:00	00:00:24	00.00.50	00:00:16	00:00:00	00:00:12	00:00:00	00:00:14	00:00:00	00:00:50	00:00:21	00:00:19	00:00:50	00:00:50	00:00:50	00:00:16	00:00:19	00:01:20	80:00:00	00:00:02	60:00:00	#######	80:00:00	00:00:14	80:00:00	00.00	00:00:28	00:00:00
Cond	00:00:57	00:00:42	00:00:20	00:01:31	00:01:05	00:00:13	00:01:03	00:00:15	00:01:08	00:00:31	10:00:00	00:00:38	00:01:30	00:03:08	00:00:57	00:03:29	00:00:22	00:02:14	00:01:58	00:01:07	00:01:00	00:01:25	00:01:29	00:01:08	00:01:10	00:01:25	00:01:59	00:00:34	00:00:44	00:00:55	00:00:20	00:01:08	00:01:05	00:00:42	00:00:43	00:00:31
Resp	Nerve low	No Alarm	No Alarm	No Alarm	Nerve low	NO alarm	Nerve low	Nerve low	Nerve low	Nerve low		10:03:50 Nerve med	Nerve low	Nerve low	Nerve low	Nerve low	Nerve fow	Nerve low	Nerve low	no alarm	Nerve low	Nerve low	Nerve low	Monto lour	Nerve row	Nerve low										
Clear	15:25:36	_			13:22:40		13:27:35	14:01:20	14:03:25	14:05:24	20:11:	10:03:50	10:06:40	10:11:22	10:13:17	10:17:47	10:19:39	_	_	10:54:23	_	_		11:17:07			13:55:32	14:04:28 Nerve low	14:06:26		14:33:38 Nerve low	14:41:16 Nerve low	14:43:12 Nerve low			10:09:46 Nerve low
Alarm	15:25:12				13:22:18		13:27:11	14:00:57	14:03:04	14:05:04	00.1	10:03:24	10:06:15	10:10:49	10:12:54	10:17:22	10:19:15	10:47:24	10:50:27	10:54:03	10:56:25	11:10:55	11:13:23	11:16:47	11:18:52	13:52:23	13:55:12	14:04:08	14:06:06		14:33:18	14:40:53	14:42:51	40.04.40		10:09:23
On Agent	15:24:58	14:20:10	14:29:09	13:18:34	13:22:10	13:23:52	13:27:06	14:00:45	14:02:58	14:04:40		10:03:09	10:06:08	10:10:37	10:12:47	10:17:08	10:19:08	10:47:04	10:50:06	10:53:44	10:56:06	11:10:34	11:13:03	11:16:31	11:18:34	13:51:02	13:55:04	14:04:01	14:05:56	14:29:11	14:33:10	14:40:38	14:42:43	40.04.42	10:01:12	10:09:15
on Cond	15:24:01	14:19:28	14:28:49	13:17:03	13:21:04	13:23:39	13:26:02	14:00:30	14:01:49	14:04:09		10:02:31	10:04:38	10:07:29	10:11:49	10:13:39	10:18:12	10:44:50	10:48:08	10:52:36	10:55:06	11:09:09	11:11:33	11:15:23	11:17:23	13:49:38	13:53:05	14:03:27	14:05:13	14:28:16	14:32:20	14:39:30	14:41:38	40.00.20	10:00:28	10:08:44
Det#	1	1	2	1	2	+	7	_	2 .	- 0		1	7	₹	7	_	2	-	7	-	7	-	7	-	2	-	7	-	7	~	7	-	2	1	- (7
Temp	20	52	52	-30	-30	-30	-30	-30	<u>۾</u>	ခု မှ		-30	-30	-30	-30	-30	-30	25	25	25	25	25	25	52	52	52	25	25	25	52	25	25	52	53	25	52
RH.	. 06	25	25	0	0	0	0	0	0 (o c		0	0	0	0	0	0	29	59	58	58	59	58	29	29	59	59	59	59	58	59	59	59	90	97	26
Contc (ug/l)	0.31	2.06	2.06	0.112	0.112	0.112	0.112	0.104	0.104	0.104		0.114	0.114	0.114	0.114	0.114	0.114	0.121	0.121	0.121	0.121	0.125	0.125	0.125	0.125	0.126	0.126	0.126	0.126	0.118	0.118	0.118	0.118	3300	0.055	0.055
Agent	XX	H	HD	GB	GB	GB	GB	GB	GB 6	9 E		GĐ	GD	GD	СD	GD	GD	GB	GB	GB	GB	GB	GB	GB	GB	СD	G	GD GD	9	9	G	GD	GD	8	×	×
Date	8/8/88	8/10/98	8/10/98	8/11/98	8/11/98	8/11/98	8/11/98	8/11/98	8/11/98	8/11/98		8/12/98	8/12/98	8/12/98	8/12/98	8/12/98	8/12/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	00/4/00	8/14/98	8/14/98

Notes														00.00°23 autocal @ 1min	3)		
Clear	Time	00:00:26	00:00:26	00.00.31	00:00:26	00:00:20	00:00:46	00:00:47	00:00:33	00.00.47	00.00	00:00-22	00:00:23	00.00-23	00.00	00.00.23	00:00:28
Alarm	Time	00:00:15	90:00:00	00:00:30	00:00:19	20:00:00	00:00:00	90:00:00	00:00:00	00:00:02	00:00:04	00:01:27	00:00:37	00:01:38	00.00.48	00.00.49	00:00:14
Cond	Lime	00:00:51	00:00:44	00:00:41	00:00:31	00:01:00	00:01:17	00:01:21	00:01:08	00:01:09	00:00:44	00:01:09	00:01:03	00:01:24	00:00.44	00:02:41	00:01:01
Resp		Nerve low	Nerve low	Nerve low	Nerve low	BLS MED	BIs Low	Bls Med	BIS Low	Bis Low	BIs Low	Ner low	Ner low	Ner low	Ner low	Nerlow	Ner low
Clear		10:25:13 10:25:39 Nerve low	10:40:00 10:40:26 Nerve low	10:44:43 10:45:14 Nerve low	11:03:59	13:58:03 BLS MED	14:07:56	14:13:55	14:29:13	14:38:21	14:49:53	09:34:56	10:11:02	10:30:07	10:59:59	11:16:57	11:37:48
Alarm		10:25:13	10:40:00	10:44:43	11:03:33	13:57:13	14:07:10	14:13:09	14:28:40	14:37:34	14:49:09	09:34:34	10:10:38 10:11:02	10:29:44	10:59:36	11:16:34	11:37:20
5	Agent	10:24:58	10:39:55	10:44:13	11:02:43 11:03:14 11:03:33 11:03:59 Nerve low	13:57:06	14:07:03 14:07:10	14:11:42 14:13:03 14:13:09 14:13:55	14:28:35	14:37:28	14:49:05	09:31:57 09:33:06 09:34:34 09:34:56	10:10:02	10:28:06	10:58:04 10:58:48	11:13:04 11:15:45 11:16:34 11:16:57	11:36:04 11:37:06 11:37:20 11:37:48
o g	puon	10:24:07	10:39:11	10:43:32	11:02:43	13:56:06	14:05:46	14:11:42	14:27:27	14:36:19	14:48:21	09:31:57	10:08:59	10:26:42	10:58:04	11:13:04	11:36:04
Det#		-	7	-	2	1	7	Ψ-	7	_	7	1	7	-	7	-	7
Temp		25	25	25	52	0	0	0	0	0	0	0	0	0	0	0	0
R H		56	56	26	26	0	0	0	0	0	0	0	0	0	0	0	0
Conc	(ngn)	0.055	0.055	0.055	0.055	2.63	1.93	1.93	1.93	1.93	1.93	0.09	0.09	60.0	0.07	0.07	0.07
Agent		×	×	×	×	모	유	유	유	유	모	×	š	×	×	š	×
Date		8/14/98	8/14/98	8/14/98	8/14/98	8/17/98	8/17/98	8/17/98	8/17/98	8/17/98	8/17/98	8/18/98	8/18/98	8/18/98	8/18/98	8/18/98	8/18/98

Startup Test Checklist and Test Data Sheet

	980206-4	Date:	8-3-98	
Software Ve	r. <u>5.028-1</u>	Time:	9:73	
Location: _	ERDEC E3510			
1. Initial Pov	ver On			
A.	Uncap the air inlet and air ex	xhaust. Place	charcoal filter	over the inlet.
B.	Connect communication cab	ole and begin "	Logall" file.	
	Record datafile name (Attach copy of data with te		· · · · · · · · · · · · · · · · · · ·	
C.	Turn horn volume to full (cl	ockwise)		
D.	Connect power and begin ste	opwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display shov	vs M43-APD		1	
Display show	vs the Software Version		<u> </u>	
Display show	vs LED TEST followed by test	patterns	✓	
Display show	vs HORNTEST and horn beeps	s twice	<u> </u>	
Display show	vs SELFTEST		<u> </u>	
Display show	s STANDBY and backflush b	egins	<u> </u>	***
Display show	vs READY within 30 minutes	after startup	<u> </u>	
Recor	d Time 2:78			
Display goes	blank approx. 15 seconds afte	r READY	$\overline{\checkmark}$	
Tested by:	G. Lozus / G. Wear	ln	Date	8/3/58

Detector S/N 980206 - 4

Date: 8-3-98

Software Ver. 5.62B -

Location: ERDEC E3510

- 1. Connect communications cable and begin "Logall"
 - A. Record datafile name To 4100. DAT

 (Attach copy of data with test records)
 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	N 6,00		
Challenge time (sec)	1		
Time to alarm (sec)	3		
Horn sounds	Pass / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass / Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	(NRV L) M H	NRV L M H	NRV L M H
	BLS D M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass/Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	00: 24 Sec		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	7100		
Challenge time (sec)	1		
Time to alarm (sec)	2		
Horn sounds	Pass/Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	Pass / Fail	Pass / Fail	Pass / Fail
Record response(s)	BLSO M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass / Fail	Pass / Fail	Pass / Fail
Record cleardown time	01:05		

Date

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by:

0200 -

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Form M43-DVT-002

Rev B (June 9, 1998)

Startup Test Checklist and Test Data Sheet

Detector S/N = ETG-2	980206-5	Date:	8-3-98	
-	5.628-1	Time:	5:45:56	
Location:	ERDEC E3510			
1. Initial Powe	er On			
A.	Uncap the air inlet and air exh	naust. Place	charcoal filter	over the inlet.
B.	Connect communication cable	e and begin	"Logall" file.	
	Record datafile name		7	
C.	Turn horn volume to full (clo	ckwise)		
D.	Connect power and begin stop	owatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display shows	M43-APD		<u></u>	
Display shows	the Software Version		<u>/</u>	
Display shows	LED TEST followed by test p	patterns	<u> </u>	
Display shows	HORNTEST and horn beeps	twice	<u> </u>	
Display shows	SELFTEST		<u> </u>	
Display shows	STANDBY and backflush be	gins	<u> </u>	
Display shows	READY within 30 minutes at	fter startup	<u> </u>	
Record	Time 2:38			
Display goes b	olank approx. 15 seconds after	READY	\checkmark	
Tested by:	G. Lugus / F. Weaven		Date	8/3/58

Detector S/N 980206-5

Date: 8-3-98

Software Ver. 5.628-1

Time: 9145:56

Location: ERDEC E3510

- 1. Connect communications cable and begin "Logall"

 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	€: 00		
Challenge time (sec)	1		
Time to alarm (sec)	3		
Horn sounds	Pass / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	Pass / Fail	Pass / Fail	Pass / Fail
Record response(s)	ORVO M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Passy Fail	Pass / Fail	Pass / Fail
Record cleardown time	60 (J2		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	7100		
Challenge time (sec)	ì		
Time to alarm (sec)	3		
Horn sounds	Pass/Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	Pass / Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRY LOW H	NRV L M H	NRV L M H
	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	(Pass)/Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	00:32		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: HE Warres / Hoger

Date

8/1/58

Form M43-DVT-002

Rev B (June 9, 1998)

page of

Data Entry Form	ш									in affect
Purpose of test:	نيڊ		Test Location:	Date:	Operator				7	00
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1000	20-01		57			Temp:			7	416-xx560
John Market	5				_			Clean		
DataFile#		Time	Sample	Conc(mg %Rh	Alarm /	Alarm Chal	ng	down	Comment	
	dat/sig		-			class/id/conc		time		
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		5.34								(E ETILD)
			1		~	NAVL		42:00		
		5:43	G Cat 6 20	9 3		NKV/H		Soils		
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		4:5:12								(= E763)
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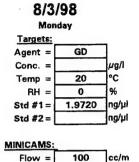
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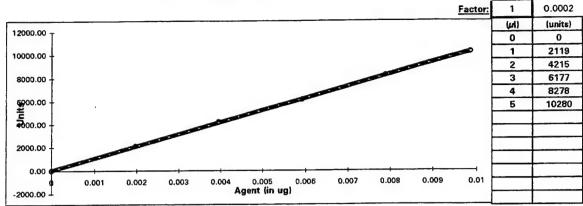
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M43 Upgrade



30



Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

14 Start test - ETG

NOTES:

1 Set agent generator for GD.

2 Run Standard Curve using GD @ 1.972 ng/ul

	GD	Log File
1	2245	0609
2	4698	0614
3	6926	0618
4	9138	0623
5	10280	0641

	GD Genera	tor Settings	
agent =	1.5 cc/m	gen temp ≃	20.0 C
dry air =	3.0 l/m	gen RH =	0 %
wet air =	0.0 l/m	amb temp =	
agt temp =	5 C	amb RH =	

3	Sample # 1 (30 sec @	100 cc/min)	= 2941	nA =	.056 mg/m3	Log file =	0833
4	Increase Agent concer	ntration.					
5	Sample # 2 (30 sec @	100 cc/min)	= 7432	nA = .	.142 mg/m3	Log file =	0856
6	Decrease Agent conce	entration.					
7	Sample # 4 (30 sec-@	100 cc/min)	= 3922	nA = .	.074 mg/m3		
8	Sample # 5 (30 sec @	100 cc/min)	= 6308	nA =	.12 mg/m3	Log file =	1026
9	Sample # 6 (30 sec @	100 cc/min)	= 6142	nA = .	.117 mg/m3	Log file =	1142
10	Start test - MSS & Int	ellitec					
11	Sample # 7 (30 sec @	100 cc/min)	= 5534	nA = .	.105 mg/m3	Log file =	1250
12	Continue testing						
13	Sample # 8 (30 sec @	100 cc/min)	= 4793	nA = .	.091 mg/m3	Log file =	1344

Operator____

Operator____

Detector S/N 980206-\$4 Date: 8-4-98

Software Ver. 5.028-1 Time: 08:35

Location: ERDEC E3510

- 1. Connect communications cable and begin "Logall"

 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	_2_		
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass/ Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H	NRV L M H
	OELS) LOO H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass/Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:25		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	3		
Horn sounds	Pass/ Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	Passy Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV M H	NRV L M H	NRV L M H
	BLSOD M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass/ Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)	·		
Record cleardown time	0:40		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Date 8-4-98

Form M43-DVT-002

Rev B (June 9, 1998)

Detector S/N <u>980206 - *</u>	5 MW
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Date: 8-4-98

Time: 08:30

Location: ERDEC E3510

- 1. Connect communications cable and begin "Logall"
 - (Attach copy of data with test records)
 - Use menu to turn on display (optional) B.

2. "H" Simulant Test

Startup testing only: elapsed time	·		
since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	5		
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H	NRV L M H
	BLS) LM) H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	(Pass) Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:34		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	2		
Horn sounds	Pass/Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	Pass/ Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRVI M H	NRV L M H	NRV L M H
	BLS L MH	BLS L M H	BLS L M H
Cleardown less than 5 minutes	(Pass) Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	1:27		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Date

8-4-98

Form M43-DVT-002

Rev B (June 9, 1998)

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Alarm Alarm

time NRV LOW BLS MED Don Don BLS MED (No Alan M. Operator: N X EN. NES 90% 90% Conc(mg %Rh 5.EZ 8-4-88 ۲. 7 Test Location: Date: ERDEC E3510 5.02.8-1 Sample G COUF R-A18 R-AIR H CONF 5 SWver#: 6 A. 7 9836 Tot 11 | DAT | 10.53 end | 10.51 | LOG1.WB1 update 11 Jun 87 0830 0832 514 0852 0829 1015 Type Time dat/sig # Host anhation から TOY110 SIE DAT Det#: 980206-07 Data Entry Form Purpose of test: 704108 704109 TO4107 DataFile#

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page 2 of chellery Letone delaly Comment Alarm Alarm Chalng down time class/id/conc time time 147 [11] NRV/Car WEL MAY/LAN 105 May/600 52 (NK1/LOW Temp: 1030 Operator: 25 12 Conc(mg | %Rh 308 ろん E S (101) 0 <u>_</u>8 5. Date: ERDEC SWVer#: SV2.5 Test Location: 1) clander J Clesy chern Ī 200 Sample DA7 1517 \$ 240 Chickis! 10/51 الجند و الجنداء end LOG1.WB1 update 11 Jun 97 Time Type dat/sig 047 Det#: 18026-04 5/6 Data Entry Form Purpose of test: かりまし 一時に DataFile# Intol

Data Entry Form

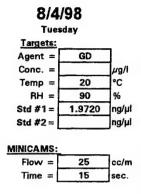
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ממים ביוווי א	Purpose of test:	Host. week.	Det#: 980206 - 05	DataEile#		TOS107								705108		705/09					105110	T35111 DAT 11:06	LOG1.WB1 up

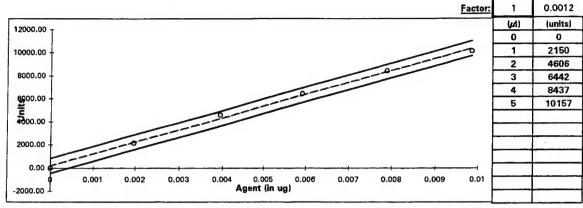
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Data Entry Form	Purpose of test:	-	Det#: 580		DataFile#		Tos 112	Tos 113			705/14								and

5 page : Comment n Alarm Chaing down class/id/conc time time とこと Temp: Operator: Alarm J. Conc(mg %Rh Date: 07 Gro clander Test Location: EMDEC AiR 3 SWver#: Sample 11:18.7c 12: 58: 59 end LOG1.WB1 update 11 Jun 97 Time Type dat/sig DAT Data Entry Form Purpose of test: [Ausal 7ASSENT DataFile# Det#:

M43 Upgrade





Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

NOTES:

- 1 Set agent generator for GD @ 90 % RH.
- 2 Run Standard Curve using GD @ 1.972 ng/ul

	GD	Log File
1	2150	0618
2	4606	0648
3	6442	0627
4	8437	0633
5	10157	0638

		GD Genera	tor Settings	
Г	agent =	1.5 cc/m	gen temp =	20.0 C
	dry air =	0.0 Vm	gen RH =	90 %
	wet air =	3.0 Vm	amb temp =	
	agt temp =	5 C	amb RH≃	

- 3 Sample # 1 (30 sec @ 100 cc/min) = 3054 nA = .055 mg/m3.
- 4 Increase Agent concentration
- 5 Sample # 2 (30 sec @ 100 cc/min) = 542 nA = .007 mg/m3.
- 6 Sample # 3 (30 sec @ 100 cc/min) = 5425 nA = .101 mg/m3.
- 7 Sample # 4 (30 sec @ 100 cc/min) = 6509 nA = .122 mg/m3.
- 8 Begin testing ETG, MSS, Intellitec
- 9 Sample # 5 (30 sec @ 100 cc/min) = 6975 nA = .13 mg/m3.
- 10 Begin second trial.
- 11 Sample # 6 (30 sec @ 100 cc/min) = 6530 nA = .12 mg/m3.
- 12 Begin third trial.
- 13 Sample # 7 (30 sec @ 100 cc/min) = 6995 nA = .13 mg/m3.
- 14 Set agent generator for GD 1.649 mg/m3
- 15 Sample # 8 (15 sec @ 25 cc/min) = 10867 nA = 1.513 mg/m3.
- 16 Decrease agent concentration.
- 17 Sample # 9 (20 sec @ 25 cc/min) = 9705 nA = 1.102 mg/m3.
- 18 Sample # 10 (15 sec @ 25 cc/min) = 6811 nA = 1.022 mg/m3.
- 19 Start first trial @ 1.022 mg/m3
- 20 Sample # 11 (15 sec @ 25 cc/min) = 6775 nA = 1.017 mg/m3.
- 21 Start second trial @ 1.017 mg/m3
- 22 Sample # 12 (15 sec @ 25 cc/min) = 6666 nA = 1.017 mg/m3.
- 23 Start third trial @ 1.00 mg/m3

Log file = 0712

Log file = 0738

Log file = 0813

Log file = 0823

Log file = 0907

Operator____

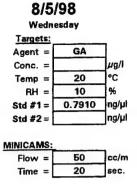
Operator____

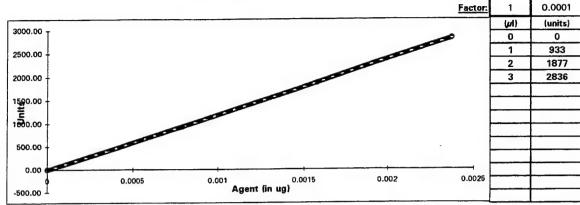
Purpose of test:	st:		Test Location:	Date:	Operator:			
			ERDEC	36/5/3	70807	ž		
Det#: Gowon	٦٩		SWer# Solf			Temp:		
DataFile#	Type	Time	Sample	Conc(mg %Rh	_	Alarm Che	g	Comment
	dat/sig				time	class/id/conc time	e time	
Tot 115	S	8:24	8:27 1) Russ. A.i					
						Alan		
		74	1) Hantsuch					HOWER KIL
		(F)				NKe lan		Ç
TOHIL	047	8.79	Phy Ace					
		76.3	Hemt Sal			RUS HED		Dere F
		8:14	Gernt Sank			NWA		
		\$:16	3			NRV MED QU Low		
		1:46	CARR					est not is butterh
10/116	2/5		Ta helly					
950 206-05		とかる				Common property and the company and the company of the party of the pa		
£11 Saj	21/2	क .'	1) MACKEULL					
			2) Rue A. K					
			J) Hent Sulle			מרז		١٥٠ ١٤٠
		-	4) Grent Sugle	À		Nr.V		monitre
192116	047	mlf.	Charal					
			Ruy An					dotall water
		9.24	HenT			TH MeD		
		3,6	Pent			NRV mc1		
bud		17:110	_					
1 Oct. WR1 update 11 Jun 97	mpdate	14 Jun 97	16 wy 12.17					

	Purpose of test:		lest Location:	Date:		Operator:					
(ETG-1)	\$ 5		E120KC	8/5/8	15	70	205				
Det#: 580206-04	26-04		SWVer#: Sulf			•	Temp:			9.10 G-A 0.104	
#o!:Jc+c/	TVDO	Timo	Cample	Conc/ma %Bh		Alarm	Marm	5	Clean) mommon	
atal licit	dat/sig		Campio	81100			class/id/conc time	20	time		
T04117	DAT	61.6	Aun Ain		Lw						
		5.15	Cham Kin								
		7.17.7	45 C	0.0		7	Nav bur	14	70		
Totils	3/2	表	Ž	0.0		5	180	15	62		
		1.31									
Toy 119	DA7	70:17	A.w			\$		4	3		
		10,25:50	C Frankin								
		10:31		6.1		20	ואער ניית	2	25		
704/20	DA7	(\$.E)	Ron A. P.		丰					GA Grelici Swort	N
			(18, Am							TKEY DAY	
		13:20	45	0.14.		23	dry hu	23	2		
121 402	515	5. 5.	() GA	0.111		15	14th Lun	51	30		
			2) close dem								
704122	0.47	14:34									
		14:50	Clean Ain		itigl						
		14:52	G-A	0.117	床	74	in town	74	49	realm claim	len
pua											

Purpose of test:	ئيد		Test Location:	Date:		Operator:	ï			
₹5	(2917)		ERDEC	8/5/97		707	1040			
Det#: ground-05	50-1		SWver#:				Temp: Ις*ς			
	ŀ				1					
Dalariie#	i ype	еше	Sample	Conc(mg %Kn	- 1	Alarm	Alarm	Chalng	_	Comment
	davsig					time	class/id/conc	time	time	
TOSILT	DA7	5.13	Rus A 11		2.8%					
		9.11.20	O							
	7	45:5	FA	0.1	2.15.	2	NEV Lin	12	33	
705118	3/5	0	GA.	G. J	21%	53	2x<	٦	25	
		ځ	Cleen day							
705119	DAT	10:73	AK							
		15:76	C/R. A.11							
		サンシ	GA	9		()	ומבר לנה	ره	70	
Tos 120	DAT.	12:23	Run A.M		318.					CA Con surrect
		13:35	Closer A.M		17,4					7
		प्राप्त, दा		0		23	they bear	23	-36-	l
		12:46:	64	0.14?		رح	11th tem	(5	30	
TUS121	311	14:0)) CA	0.111	7	13	19Kr Lun	17	29	
			りのれつい		(Agh)					
To5122	047	95.71	Rem Ain							
To:51		50:51	Clear A.M		1741	+'	NOV. Com	4	12.	

M43 Upgrade





Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

NOTES:

1 Set agent generator for GA low RH.

2 Run Standard curve using GA @ .791 ng/ul.

0	0	Log File
1	933	0712
2	1877	0716
3	2836	0721

	GA Generator Settings							
	agent =	.19 cc/m	gen temp =	20.0 C				
Г	dry air =	3.0 Vm	gen RH =	0%				
	wet air =	0.0 Vm	amb temp =					
	agt temp =	5 C	amb RH =					

3 Sample # 1, (20 sec @ 50 cc/min) = 987 nA = .05 mg/m3.

4 Raise agent concentration

5 Sample # 2, (20 sec @ 50 cc/min) = 2072 nA = .104 mg/m3.

6 Start first trial.

7 Sample # 3, (20 sec @ 50 cc/min) = 2290 nA = .115 mg/m3.

8 Start second trial.

9 Sample # 4, (20 sec @ 50 cc/min) = 2298 nA = .116 mg/m3.

10 Start third trial.

11 Increase humidity, RH = 90%

12 Sample # 5, (20 sec @ 50 cc/min) = 2298 nA = .116 mg/m3.

13 Begin first trial.

14 Sample # 6, (20 sec @ 50 cc/min) = 2209 nA = .111 mg/m3.

15 Begin second trial.

16 Sample # 7, (20 sec @ 50 cc/min) = 2356 nA = .119 mg/m3.

17 Begin third trial.

Operator____

Operator

Startup Test Checklist and Test Data Sheet

Detector S/N	98020B-4	ate:	-6-98	
Software Ver	5.028-1 I	ime:8	:25	
Location:	ERDEC E3510	Detector	lun ru	uning
1. Initial Pow	er On	might t	- fleme	lund,
A.	Uncap the air inlet and air exha	ıst. Place cha	rcoal filter ov	ver the inlet.
B.	Connect communication cable a	ınd begin "Log	gall" file.	
	Record datafile name			
C.	Turn horn volume to full (clock	wise)		
D.	Connect power and begin stopw	atch.		
E.	Verify startup sequence.			
			Pass	Fail
Display shows	M43-APD			
Display shows	the Software Version			
Display shows	LED TEST followed by test pat	terns		
Display shows	IIODNITTOT . 11 1			
	HORNTEST and horn beeps tw	ice		- Washington
Display shows	SELFTEST	ice		
• •				
Display shows	SELFTEST	ıs	_	
Display shows	SELFTEST STANDBY and backflush begin	ıs startup		
Display shows Display shows Record	SELFTEST STANDBY and backflush begin READY within 30 minutes after	startup		
Display shows Display shows Record	SELFTEST STANDBY and backflush begin READY within 30 minutes after Time 2:28	startup		

Detector S/N	980206-4	Date: _	8-6-98	
Software Ver.	5.023-1	Time:	8:25	

Location: CBDcom E3510

- 1. Connect communications cable and begin "Logall"

 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	,		
Time to alarm (sec)	2		
Horn sounds	Pass/Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass/Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H	NRV L M H
	BLXO M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:28		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	5		
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	(Pass) Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV)LM)H	NRV L M H	NRV L M H
	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	(Pass) Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:35		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Date 8-6-98

Form M43-DVT-002

Rev B (June 9, 1998)

Startup Test Checklist and Test Data Sheet

Detector S/N	980206-5	Date: _	8-6-98	
Software Ver	5.028-1	Time: _	8-6-98	4
Location: _	ERDEC E3510			
1. Initial Pow	ver On			
A.	Uncap the air inlet and air ex	haust. Pla	ce charcoal filter	over the inlet.
B.	Connect communication cab	le and begi	in "Logall" file.	
	Record datafile name 70. (Attach copy of data with tes		AT	
C.	Turn horn volume to full (clo	ockwise)		
D.	Connect power and begin sto	pwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	s M43-APD			
Display shows	s the Software Version			
Display shows	s LED TEST followed by test	patterns	_	
Display shows	HORNTEST and horn beeps	twice		
Display shows	SELFTEST		_	<u> </u>
Display shows	STANDBY and backflush be	gins		
Display shows	READY within 30 minutes a	fter startup		
Record	Time 2:38	· · · · · ·	_	
Display goes b	olank approx. 15 seconds after	READY		
Tested by:	Mean		Date	8-6-98

Confidence Test Data Sheet

Detector S/N	980206-5	Date:	8-

Location: BSID ERDEC

1. Connect communications cable and begin "Logall"

B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	5		
Horn sounds	Pass)Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H	NRV L M H
	ELS)L DOTH	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:37		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	7		
Time to alarm (sec)	10		
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	Pass Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV) L WH	NRV L M H	NRV L M H
	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	(Pass) Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	1:45		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Form M43-DVT-002

Rev B (June 9, 1998)

page 1 of 2

4 4		וכפו בספמופווי					1		
y was	tion	E3510	-9-8	- 98	118	MENRY			
980206-		SWver#:			F	0	v		
	Time	Sample	Conc(ma %Rh		Alarm	APPROX Alarm	Chaing	Clean	Comment
dat/sig			9		_	d/conc	9		
TO4123 DAT	0825	STARTUP							
		H CONF		-	2	8LS LOW	-	0:28	
		G COUR		-	ا لم	NRV MED	-	0:35	
TOS123 DAT	0834	STARTUP							
	ė	H CONF		-	2	BLS MED	1	0:37	
		9 Cour			101	NRV MED	`	1:45	
TOYIZY DAT	7160	48	6600	60	20 /	WRY LOW	20	61	PPLR 299 SECD 247
705124 DAT	0931	GB	. 660.	4%	18	NRV LOW	8/	72	PPLR 298-299 SECD 279
TO4125 DAT	4560	GB	. 113	4%	17 /	NRVLOW	17	20	
TOS125 DAT	1007	48	, 113	4%	20	WRV LOW	20	24	
T04126 SIG	1025	68	711.	4%	17	NRV LOW	17	61	
TOS126 SIF	1040	68	711'	4/2	100	NRV LOW	18	61	
				·					
700						:			

Purpose of test:	st:		Test Location:	Date:		Operator:	Jr.			
Hovt. workpation	anh	etim	E3510	8-6-	86	Z	YUU			PRE-TEST : BOTH DETECTIONS
Det#: 980206-	106-		SWver#:				Temp: + 70€			- 1
44	F 5		5.028-1			$\overline{}$	APPROX	-	Clean	
DataFile#	Type	Time	Sample	Conc(mg	%Rh	Alarm	Alarm Chal	<u>B</u>	down	Comment
- 1	davaig		()		T		ciass/iu/collic			
704127	DAT	13:25	53	0.108	90	16	WRV LOW	16	20	
705127	3A7	13:36	GB	0.108	90	87	NRV LOW	81	19	
704128	247	14:00	6B	0.109	90	20	NRV LOW	20	20	
T05128	DAT	14:12	GB	0.109	90	18	NRV LOW	18	19	
704129	\$514	14:23	ÇB	0.114	90	18/	NRV LOW	1	61	
105129	516	14:35	J. B.	6.114	90	17	NRV LOW	17	61	
700										
LOG1.WB1 update 11 Jun 97	pdate 1	1 Jun 97								A CONTRACTOR OF THE CONTRACTOR

M43 Upgrade

8/6/98 Thursday Targets: Agent = Conc. = µg/l 20 °C Temp = RH = 10 96 0.3998 Std #1 = ng/µl Std #2 = ng/µl

50

	Factor:	1	0.0001
5000.00 T		(M)	(units)
		0	0
4500.00 +		1	846
4000.00 +		2	1768
3500.00		3	2705
3000.00		4	3636
280.00 -		5	4450
250.00			
1500.00 -			
1000.00			
500.00			
0.00			
-500.00 0.0002 0.0004 0.0006 0.0008 Agento(in ug) 0.0012 0.001	4 0.0016 0.0018 0.002		

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

cc/m

Operators: Juan & Sonny

MINICAMS:

Flow = Time =

NOTES:

1 Set agent generator for GB low RH.

2 Run Standard curve using GB @ .3998 ng/ul.

0	0	Log File
1	846	0631
2	1768	0636
3	2705	0641
4	3636	0646
5	4450	0651

	GB Genera	tor Settings	
agent =	.25 cc/m	gen temp =	20.0 C
dry air =	3.0 l/m	gen RH =	0 %
wet air =	0.0 Vm	amb temp =	
agt temp =	5 C	amb RH=	

- 3 Sample # 1, (15 sec @ 50 cc/min) = 1383 nA = .05 mg/m3.
- 4 Increase agent concentraation
- 5 Sample # 2, (15 sec @ 50 cc/min) = 1787 nA = .064 mg/m3.
- 6 Increase agent concentration
- Log File = 07427 Sample # 3, (15 sec @ 50 cc/min) = 2531 nA = .09 mg/m3.
- 8 Increase agent concentration
- 9 Sample # 4, (15 sec @ 50 cc/min) = 2760 nA = .099 mg/m3.
- 10 Begin trail #1
- 11 Sample # 5, (15 sec @ 50 cc/min) = 3278 nA = .113 mg/m3.
- 12 Begin trail #2
- 13 Sample # 6, (15 sec @ 50 cc/min) = 3158 nA = .113 mg/m3. Log File = 0917
- 14 Begin trail #3
- 15 Raise humidity. RH = 90%
- 16 Sample # 7, (15 sec @ 50 cc/min) = 3160 nA = .113 mg/m3. 17 Sample # 8, (15 sec @ 50 cc/min) = 2459 nA = .088 mg/m3.
- 18 Increase agent concentration
- 19 Sample # 9, (15 sec @ 50 cc/min) = 3021 nA = .108 mg/m3. LogFile = 1224
- 20 Begin trail #1 @ 90% RH
- 21 Sample # 10, (15 sec @ 50 cc/min) = 3545 nA = .126 mg/m3. LogFile = 124922 Sample # 11, (15 sec @ 50 cc/min) = 3039 nA = .109 mg/m3.
- 23 Begin trail #2 @ 90% RH
- 24 Sample # 12, (15 sec @ 50 cc/min) = 3200 nA = .114 mg/m3.
- 25 Begin trail #3 @ 90% RH

- Log File = 0952
- Log File = 1209

- LogFile = 1309
- LogFile = 1334

Operator

Operator

Data Ellity Form	==									o Sha
Purpose of test:	st:		Test Location:	Date:	Operator:	ï.		1		
Cart ByRh,	Shah,		ERDEC	x/1/2	ا 7 د	620)			D.A.Z	
F2~	10 - No.		SWVer#: \$u28			Temp:				
							_			
DataFile#	Туре	Time	Sample	Conc(mg %Rh	=	Alarm	ng		Comment	
	dat/sig				time	class/id/conc time	time	<u>o</u>		
154.125	DA7	14:57	Run Ain							
		1458	H Court Samon			1143 Lin				1
. 77'		1759	F.C. 1			Not ten				インターをから
rough day of	7 7 7	(500	12c, b, flyb,						15 m = 8:11 m	Now! Comb della
Tutizy	Sign	1 51:4	Back Alb C							
131		(t)							MOITITE IN LE	
		ľ	<u> </u>			1115 HEY			J T 1, (c)	
		予	Gent Sul			Mr Car				
									Oras male	
ETC-2 980146-35	Sc-3010									
705/2	511	P. 1. 7	ן משנה-נויץ							
02.1		ঠ							MUITTUR MOEL	
		Ų.				त्राप भार				
		3				No Hi				
Tister	DAT	8.21	C (Free glass							
(3)		(1.8	Back Ply L				·		-J Ø ←	
		\$2.76	Rus A. H						Deled Frole	
		8:29				त्य मारा)				
EF 30 pue		CT 3	Great Sult			NAV MEI)				
LOG1.WB11	update 1	1 Jun 97								

page 2_of

Purpose of test:			Test Location:	Date:		Operator:				
主			きんりゃく	8/1188		10207	to)			L+M
Det#: Chown-ch	40-0		SWver#: Sulf				Temp: 2".			
						1		_	Clean	
DataFile# T	Type Tin	Time	Sample	Conc(mg %Rh		Alarm /	Alarm class/id/conc	Chalng	down	Comment
1.04/25	l	£33	Rue A. u.							
117	!	(4:8	HSleen Main	6:1	E C					
	100	8:49	(+D	1.9	Low	J	ALI LIW	و	70	
	·			q						810 (H) CM 2,12
704133	5/6- 9	9.73	9 HO	27	E	-	Mrs 4m	.j _	29	
		7	((tandah			÷				
										7.4.7
To4134	DAT 9	9:31	Reen A.M							
	6	9.51	Cleun Aik							
	6	9.53	(40)	2,4	Lew	Ģ	Red Low	ا	25	
										add heristing a HD 10:47 2.6)
To4175	DAT	15.22	Run AIN		, i					
	- Lo	10, 47	Closes A.W		14/2/			·		
	7	10; 4d	(1)	7.117	Hil	7	1725 Low	7	59	
704136	-51i2	11:36	ФĦ	2.154	1.44.1	5	My Len	7	29	
Toylar	DAT 1	11:43	Rom A. W							
		35:11	Cles, A. W		213					
	-	11;59	ひま	8577	7.6%	上	1345 Low	7	52	(307%)
end										
LOG1.WB1 update 11 Jun 97	date 11 J	un 97								

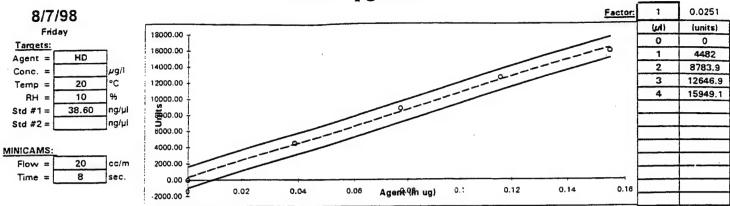
33	## Time 1	Swver#: Sample C(12,1 A.c. (41) H19	81.7/57 Conc(mg %		Lo ac	:d E			LKM
DataFile# Type dats Testile dats		Sample C(12, 4.6, (41) H1)	9		c				
DataFile# Type dat/si Tex Line OA-		Sample (11) (11)	3		ادا				
		C(12, 44, (-11)			=			Clean	Common
						class/id/conc	time	time	COLLINEIR
					M	1317 Low	1,	29	
П		+ - i -		-					
105 (7) 15/1		 		- m	M	1713 lin	27	26	
									
Toy 13 14 0.47	7 9:54	-1 Rus A.c.							
		 							
	72.27		7,4	ten	5	(765 Low	6	27	
			ĺ						4) [hemidin to HO 10:44 2.17]
Tos (85 DAT	3:2	Chy A. h							
	7011		7	88%					
	90:11		2.7	88%	7	Mcs 6.W	7	0 5	
TOS 176 SN-	1	<u> </u>	2.154	86%	(X)	RLI LOV	×	67	
Tos 137 01	OA7 1210-	Ryn Air							
	30%	200		827.					
	7. 7		7.7	43	<i>5</i>	(آرا لمس	5	28	7,005)
700									
LOG1.WB1 update 11 Jun 97	9 TT Jun 9								

page # of

urpose of te	st		Test Location:	Date:		Operator.	ı.			
H-0				85/2/3		407				
Det#: 9'86 2	<i>-</i> €-04		SWver#: Sulf				Temp: 20%-			
DataEilo#	Tung	Timo	Cample	balloud)	% Dh	Alarm	Alarm	Chalad	Clean	
Jaiar IIC#	dat/sig	<u> </u>	Sample	COLICINIS	INO/		class/id/conc time	2	time	
To+138 DAT	DAT	13:21	Row Ain							
	•	14.00	Clean		ORy Lin					
		19:01	HO	36.0	Len	pi	(365 Luw	Ş	01:1	
Toy 1309	-115	(4.40	O HD	74	Lew	J	Mis Gen	و	1:07	re more rawh (use often claim
			9 Chan den							
			1. (*)	·						
										10 HOLEN -> 52. 7
04140	ONT	H:55	Ren Air							
		(S)	Cleen Ain		4					
		15.12	1+0	52.9	hr	و.	1745 Low	و	()3,	. re-alen
			- 1-							
								_		
					1					
end										
LOG1.WB1 update 11'Jun 97	update	11"-Jun-97	-							

Purpose of test:	St:		Test Location:	Date:		Operator:				in after
04				34/4/8		70				
Det#: 970 /46-04	156 Just		SWver#: 501 (\$			•	Temp: 204			
									Clean	
DataFile#	Type	Lime	Sample	Conc(mg	%Kh	Alarm	Alarm Chal	ng	down	Comment
705178		14:53	A. A. O.							
		14:14	(Trun Kin							
		14:15	HO	0)C	Leve	2	Acs Low	7	1:0	Kalen Jein Remush (un
										L
15 PT SOT	312	14:50	OHO	μL	Lin	έſ	(70) lew	7	0.21	VE word Stangt Cunx
			y c(per du							
			2) C(2, C							
										raind (41) Gare -> 52.5
735140	DAIT	15.A	Rom Bin							İ
		1574	Class Ain		hu					(Wind (40)
		12:31	HD	575	Lin	M	ttes 600	~	0.59	
,										
6										
LOG1 WB1 update 11 Jun 97	ndate 1	1-Jun 97								

M43 Upgrade



Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

NOTES:

1 Set agent generator for HD low RH.

2 Run Standard curve using HD @ 38.60 ng/ul.

0	0
1	4482
2	8783.9
3	12646.9
4	15949.1

	HD General	tor Settings	
agent =	.25 cc/m	gen temo =	20.0 C
dry air =	3.0 Vm	gen RH =	0%
wet air =	0.0 Vm	amo temo =	
agt temp =	20 C	amo RH =	3 %

3 Sample # 1, (50 sec @ 50 cc/min) = 13812 nA = 3.11 mg/m3.

4 Increase agent concentration

5 Sample # 2, (50 sec @ 50 cc/min) = 8911.5 nA = 1.9771 mg/m3.

6 Sample # 3, (50 sec @ 50 cc/min) = 8720 nA = 1.933 mg/m3.

7 Begin Trial # 1 @ 1.933 mg/m3

8 Sample # 4, (50 sec @ 50 cc/min) = 9528 nA = 2.12 mg/m3.

9 Begin Trial # 2 @ 2.12 mg/m3

10 Sample # 5, (50 sec @ 50 cc/min) = 9214 nA = 2.047 mg/m3.

11 Begin Trial # 3 @ 2.047 mg/m3

12 Raise Humidity. RH = 90%

13 Sample # 6, (50 sec @ 50 cc/min) = 10804 nA = 2.415 mg/m3.

14 Lower concentration

15 Sample # 7, (50 sec @ 50 cc/min) = 9859 nA = 2.197 mg/m3.

16 Begin Trial # 1 @ 1.933 mg/m3 and 90% RH

17 Sample # 8, (50 sec @ 50 cc/min) = 9677 nA = 2.154 mg/m3.

18 Begin Trial # 1 @ 2.154 mg/m3 and 90% RH

19 Sample # 9, (50 sec @ 50 cc/min) = 10126nA = 2.258 mg/m3.

20 Begin Trial # 1 @ 2.258 mg/m3 and 90% RH

21 Sample # 10, (8 sec @ 20 cc/min) = 3238 nA = 10.39 mg/m3.

22 Sample # 11, (8 sec @ 20 cc/min) = 8126 nA = 2860 mg/m3.

23 Sample # 12, (8 sec @ 20 cc/min) = 10349 nA = 36 mg/m3.

24 Begin Trial # 1 @ 36 mg/m3

25 Sample # 13, (8 sec @ 20 cc/min) = 9892 nA = 34 mg/m3.

26 Begin Trial # 2 @ 34 mg/m3

27 Sample # 14, (8 sec @ 20 cc/min) = 15006 nA =52.917 mg/m3.

28 Begin Trial # 3 @ 52.917 mg/m3

}	ID General	or Settings	
agent =	.25 cc/m	gen temp =	20.0 C
ory aur =	0.0 Vm	gen RH ≠	0 %
wet air =	3.0 Vm	amb temp =	
agt temp =	20 C	amb RH =	90 %

Operator____

980807HD.XLS - Page 1 of 1

Printed: 8/7/98

Operator______

page if of 970 206-CS 98020107 Chu にない Comment Clean Conc(mg %Rh Alarm Alarm Chalng down time class/id/conc time time Temp: プ^ルに NRV MED ALS MED BLS MED NRV MED Lo 22) Operator: 85/2/3 Date: Gent Suyle Gea + Sayle Heunt Sunte H cut Sauch SWver#: 502.15 Run Air Awa ALM Test Location: ERDEC Sample 7:25 7.26 7:12 7.73 11.7 7.13 Type Time dat/sig DAT DAT Cont Chech Data Entry 'm Purpose or est: Det#. NYJ 141501 T34/41 DataFile#

end LOG1.WB1 update 11 Jun 97

page 2 of

Purpose or test:	est:		Test Location:	Date:		Operator:				page 🗲 of
			ERDES	25/2/2		3	107 m			
Det#: 980	40-90003 b	y	SWver#: SUL	•			Temp: 20ピッパン			
1000	7					-			\top	
Dalariie#	dat/sig	9	odiipie	Conclud Mari		time	class/id/conc time	2	time	Comment
To 4142	047	9185	Clas AM							
		9)46	* >		35,		Nume	2.33		
		9:57	Clea Ain							
		5,58	3	350.0	35,	(50)	NARVE	[;o]	1:14-15	10:06 UX Can 0.058 mg/m 7
		£7.01	clea Ain							
		N:24:78	3	٥٥	15,	22	Kx 4-7	35	2.6	10.79 VX GMK 0.05
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		05: 67:21	o clean AM							5
		12:36:21		7 0.11	81%	1	Num	2:30	١	7
		42.61	Clas Ail							20.1
		17: 25:30		0.1	428	38	5	36	14	
										13:45 radin UKcome
Totity	DAT	大	Par Arr							17:50 W COME ON (30°C)
		14:24	Closen		£6,5					rain come again com and 0.51 2/19
		14:30	ゞ	0,3	\$18,	Ü	Mrs Lun	6	25	
12481 end	7.5	(5 to	×	0.71	288	7	cultiv con	ل	30	
1 OG1 WR1 update 11 Jun 97	update	11 Jun 97	X .			1	2		2,5	=11+ Alan. #0 ,5 Le, Cana

page__of__ ٤ Data Entr

Data Entr	Ę,									afied	io and
Purpose of test:	<u></u>		Test Location:	Date:		Operator:					
			EP-DEC	16/2/2		40207	20)				
Erry Grov	Sec 20 - 05		SWver#: Swt			•	Temp: 246				
i	!					_			Clean		
DataFile#	Type	Time	Sample	Conc(mg %Rh	%Rh	u	Alarm Chal	ng	down	Comment	
	dat/sig						class/id/conc		time		
7.51m	047	11/01	Clea, Ail								
	•	(c) 1:30		350,0	75.	25	ine tim	52	22		
Tosites	DAT	15:51	Row Air								
		4:11	cles, Are								
	•	51:17	*>	0.15	36	13	Mar Low	13	23	11:40 add humality	
		12:49	دايم وسر								
		15:21	×	7 0.11	328	1:16	NAV Con	1:16	20	2 Conegal 0.29 0.11	
										I come and oil	
705144	DAT	14:16	Pan AM								
		14:35	Clean Acre								
		14:40	*	0.31	38%	7)	MRYCON	12	23		
pue											
LOG1.WB1 update 11 Jun 97	pdate 1	1 Jun 97									

Luipose of test.	St.		lest Location:	Date:		Operator.				
Check out - Asylen	1- Azu	ર્વ	ERDEL	26/2/8						
Det#:			SWver#:				Тетр:			
7	ŀ	i			1					
Datar lie#	dat/sig	- IIIe	Sample	Conc(mg %Kn	1	time	class/id/conc time	D	down	Comment
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		r.2.24			ح	8/3Z	NAV			
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		h								
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		कःक	ž							Dulut
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		%ंट:3	5	انص	**	1	ななり	##	Via	
										·
TAUS OU 4	DAT	8:44	Ran Ain							
		95.50 Se	Clay Air							A:1.6
		8:27:30		10,4	15	3211	ング	34:7	77	0.047 hs/r"
										7)40 O. 026
7000				_						

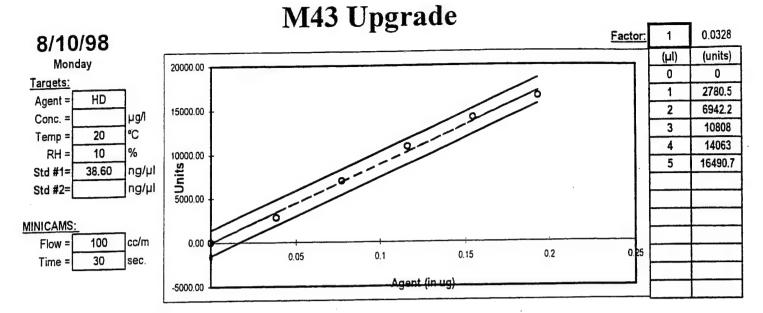
267 980 206-05 9802007 EHU MYT Comment Clean Alarm Alarm Chalng down time class/id/conc time time Temp: 700 NKU MED ALS MED ALS ALCO NRV MED 10 th Operator: Conc(mg %Rh 85/2/3 Date: Heurt Suple Gent Single Geen + Sayle Hcut Sayl Run Ain Awa Ain SWver#: 502 is Test Location: ERDEC Sample 7:15 7.26 end LOG1.WB1_update_11_Jun_97 7:12 7.13 1:1 D47 7:10 Type Time dat/sig DAT Cont Chel Purpose of test: Dett. 277 141501 704/41 DataFile#

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				ng	e time		<u></u>						20 4	5						
		200		ည်	S tim					3	. 3	*	ALARY 30"	72						
J.	Mese	Temp: + 52		Alarm	class/id/conc time					11/2 A140M	NON TON	No ALARA	No ALC	No ALARM	NRV HI					
Operator.	ME			Alarm	time															
	86			%Rh																
Date:	8-10-			Conc(mg %									1.95							
Test Location:	ERDEC 3510	SWver#:	5.028-1	Sample		STARTUP		STARTUP	C-AIR	H- CONE	G-CONF	H-CONF	HD	H-LONE	G-LONE	C-AIR	C-AIR			
)			Time		0401		1047	1059	1102	1103	1107	\$111	8011	1110	1125	1135			
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Purpose of test:	7	Det#: 980106-4		DataFile#		104147		705147	841401				TACHINA DAT	841501		TAOYISD	7405150			700
Pur	2	Det		Date		10		10	10				1/4	1/2		72	TA			0

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# 1 & # 5	£.	3510	8-10-8	14	Marie			
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		4/000			N. A. Lon	91		
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	Cirl							
	9 1111	£ 4.0						
1 45	1118	JIH						
		H-LONE			No ALARA	4		
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			Clean	down	time		١	1					((
		Ç		Chalng	time		И						4	_							
J.:	12 Jan	Temp: + 52 °C		Alarm	class/id/conc time		LWH	GAMS	7x A 1				BLS H1	NRV MED							
Operator:				el.	time		+	4					١	(
	86-0			3 %Rh										·	•						-
Date:	8-10			Conc(mg %Rh																	
Test Location:	ERDEC 3510	SWver#:	5.028-1	Sample		R-AIR	H COPF			R-A18	And the state of t	R-AIR	4-CONF	G-60NF		R-AIR					
	- }			Time		1510	1512			1517		8151-	1519	1521		1525					
اندا	aletin	190	* # 5	Type	dat/sig	745				516		140				514					
Purpose of test:	Lost lin	Δ-	# 1	DataFile#		704155				704156		705155 DAT				705156				740	



Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Oper

NOTES:

1 Set agent generator for HD @ 52 C and ~25% RH.

2 Run Standard curve using HD @ 38.6 ng/ul.

1	2780.5
2	6942.2
3	10808
4	14063
5	16490.7

dry air =	2.25 l/m	gen RH ⇒	25 %
t air =	0.75 Vm	mb temp =	18 C
emp =	20 C	amb RH =	0 %

- 3 Sample # 1, 30 sec @ 100 cc/min = 14949.7 nA = 3.38 mg/m3.
- 4 Decrease agent concentration.
- 5 Sample # 2, 30 sec @ 100 cc/min = 8589.1 nA = 1.95 mg/m3.
- 6 Sample # 2, 30 sec @ 100 cc/min = 8759.5 nA = 1.99 mg/m3.
- 7 Sample # 3, 30 sec @ 100 cc/min = 9092.5 nA = 2.06 mg/m3.
- 8 Begin trail # 1 @ 2.06 mg/m3

agent =	200 cc/m	gen temp =	20 C
dry air =	2.25 l/m	gen RH ⇒	25 %
wet air =	0.75 l/m	mb temp =	18 C
agt temp =	20 C	amb RH =	0 %

HD Generator Settings

980810hd - Page 1 of 1 Printed: 8/13/98

Operator_

Operator_

page 1 of Data Entry Form

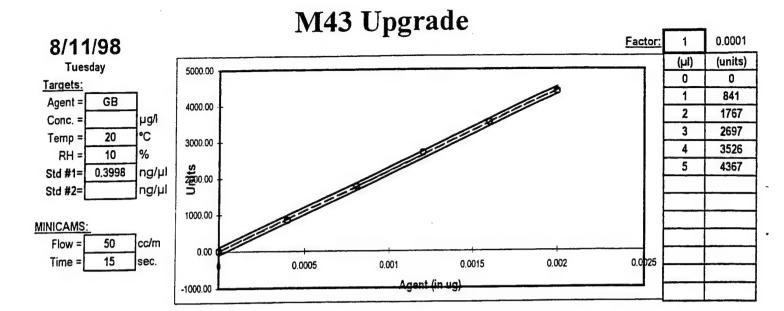
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Operator	50207			Alarm time															
	i		! {																
Date:	36/11/3	,		Conc(mg %Kh															
Test Location:		SWver#: Sor B		Sample	Chamle Air	Hant	Grant		C.S. 6.7 (N)	(+ con+	P. Cs. T						·		1
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يد =	1	79	9	dat/sig	DAT			7			7								Halfa.
Purpose of tes	Cont Cheer,	E74 80 tel-104		Dalar lie#	To4157		14.4	30-902026	72127			-						pud	TMF Hatis

page of				, , , , , , , , , , , , , , , , , , ,	1 9 et	7 (// //	Spert			(ce.n.1(+								
		Comment	PK	Schu hugel	alakin atters ve mus	Mar Lin along	>			14:35 Chart dim								
		Clean						57	70									
		Bu		03		200		7						:				
	Temp:	- Juoul		North		Chur		Mar Low	War Law	4								
Operator		Alarm			(a; y			7	42									
		%Rh			* fe													_
Date: 8/4/98		Conc(mg		0,112	Trains T			O.107								Andrews, and the second		
Test Location:	SWver#: SUL		77:71	J-9 -	y Act-or	JL)		0 GB	7 GU									
(70,5-)		Time	11	1111	Din Hithton	13; 18:45		93.cl	14100 Z							A de comment des seus est de constant de c	٠	-
	Э		D/47	**	Dona H			-1/5			•							
Purpose of test:	Det#: 9702%-07	DataFile#	251407		(12:1)			To4159					i i				end	1

page 7 of dita in file Totist dat de a wind fly 135 Come 65 0,104 Comment 47 Clean down 72 time = Chalng class/id/conc time MRV Len (NRVCBin) MRV CIEV ころくらい Temp: L 0.7e) Alarm Alarm Operator: ۹ b time R Conc(mg %Rh O. 144 0.117 Date: SWver#: 50 LF Test Location: EPLのだく ロら Z SI SI Sample Det#: 970206-05 TUTOLE (12,C) SIV (7:59 11:11 end LOG1.WB1 update 11 Jun 97 17:61 135158 047 (3:16 Type Time dat/sig Data Entry Form Purpose of test: 7/85/545 7.05189 DataFile#

5 bage_

n <u>mage</u>											,			mitable	tector								
					Comment			15°C		-35 (-11.9°C			7	1 1th 25 2									
				Ť	down time					, מל			,	15					1			·	
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	:		Temp:		class/id/conc time				An ter	וקשר דייר			MAR			ולמט לנה	4		NWC	Alemon			
And the state of t	Operator		Te		time ck					188 11						0.0	gh		1				
		S.F.		70 /0	10 No.																		
	Date:	8/11/5F			Concling											۲.	6.		۲.	c`			
	Test Location:		SWver#:		Sample	-60		Chush an	J-S	6-3	du-	Cleur		N. C.	De la company de	3	C-B/Alien	A.W	6-13	17			
	. 1	Terl	S		9	1.1	-: //	7.	1:3	TS:M://	}	:	17.559.11.	4.3	17.7.T.1	美	[[:15:1]	01,30	1717	(L/J)	Jn: Jh: Cl	かんし	
	-			!	dat/sig	1)//17		OA7						7,47	-								
במות בנות או סונו	Purpose of tes	Check-ant	Det#:	#01:Joto		Binzak/		(Ausar						7Avtor									pue



Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Oper

NOTES:

1 Set agent generator for GB @ -30 C.

2 Run Standard curve using GB @ .3998 ng/ul.

		log file
1	841	0633
2	1767	638
3	2697	642
4	3526	647
5	4367	652

G	3 Genera	tor Setting	gs
agent =	cc/m	gen temp =	С
dry air =	3.00 l/m	gen RH =	25 %
wet air =	0.00 l/m	mb temp =	18 C
agt temp =	20 C	amb RH =	0 %

- 3 Intellitec and MSS detectors were taken out of hood for repairment
- 4 Sample # 1, 15 sec @ 50 cc/min = 3094 nA = .112 mg/m3

Logfile = 1204

- 5 Start test on ETG Detectors @ .112 mg/m3
- 6 Sample # 2, 15 sec @ 50 cc/min = 3559 nA = .129 mg/m3

Logfile = 1232

- 7 Lower agent concentration
- 8 Sample # 3, 15 sec @ 50 cc/min = 2857 nA = .104 mg/m3

Logfile = 1250

- 9 Trail # 2, @ .104 mg/m3.
- 10 Start test on Intellitec Detectors @ .104 mg/m3

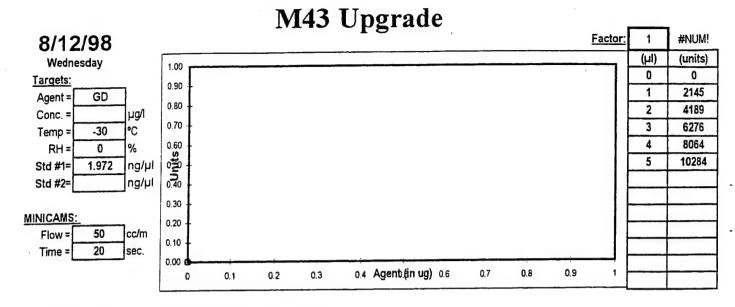
Operator_

Operator_

Detector S/N	980206-4		8-12-98		
Software Ver.	5.028-1	Time:	08:40		
Location:	ERDEC E 3510				
1. Initial Powe	er On				
A.	Uncap the air inlet and air ex	haust. Place	charcoal filter ov	er the inlet.	
В.	Connect communication cab	le and begin	"Logall" file.		
	Record datafile name		BT		
C.	Turn horn volume to full (clo	ockwise)			
D.	Connect power and begin sto	pwatch.			
E.	Verify startup sequence.				
			Pass	Fail	
Display shows	M43-APD		<u></u>		
Display shows	the Software Version				
Display shows	LED TEST followed by test	patterns			
Display shows	HORNTEST and horn beeps	twice	1111	-	
Display shows	SELFTEST		_		
Display shows	STANDBY and backflush b	egins			
Display shows	READY within 30 minutes a	after startup	_		8:42:42
Record	Time 2:38				8:40:12
Display goes b	olank approx. 15 seconds after	r READY			2:3
Tested by:	Lesaver		Date	8-12-9	8

Detector S/N	980206-5 Date:	8-12-98		
Software Ver		08:50		
Location:	ERDEC 3510			
1. Initial Pow	er On			
A.	Uncap the air inlet and air exhaust. Place	charcoal filter o	ver the inlet.	
B.	Connect communication cable and begin	"Logall" file.		
	Record datafile name 705/60. 3 (Attach copy of data with test records)	AT		
C.	Turn horn volume to full (clockwise)			
D.	Connect power and begin stopwatch.			
E.	Verify startup sequence.			·
		Pass	Fail	
Display shows	s M43-APD			
Display shows	the Software Version	/		
Display shows	LED TEST followed by test patterns			
Display shows	HORNTEST and horn beeps twice			
Display shows	SELFTEST	_		
Display shows	STANDBY and backflush begins	11/1/		
Display shows	READY within 30 minutes after startup	_		8:51:13
Record	Time 2:38			8:49:04
Display goes b	lank approx. 15 seconds after READY			2:09
Tested by:	HE)	Date	8-12-	98

Matine Sign 1 8:40 8:40 7 8:40 7 9:12 9:12 9:19 9:19 9:22		Care.	2	Operator				
10206 - 8 17 * * * 5 17 * * 5 17 * 6 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ERDEC 3500	8-12-	79	AUU	J£J			
Frime Signature	SWver#:			T	Temp: -30	2		
Type Time S dat/sig 60 DAT 8:40 60 DAT 8:50 61 DAT 9:12 61 DAT 8:18	5.028-1			\rightarrow		_		
DAT 8:40 DAT 8:50 DAT 9:11 DAT 9:12 9:12 9:19 9:22	Sample	Conc(mg %Rh		٦	Alarm	g		Comment
DAT 8:40 DAT 8:50 DAT 9:11 DAT 9:12 9:12 9:19 9:22			3	time	class/id/conc t	time	time	
DAT 8:50 DAT 9:11 DAT 9:12 9:15 9:19 9:22	STARTUP							Detector have been
247 9:11 9:12 9:15 247 9:19 9:19	STARTUR							shit down of wassed of
247 9:11 9:12 247 9:15 9:19 9:22								Do 18 hours 00
247 9:11 9:12 247 9:18 9:19 9:22								
9:12	C-AIR							Colispus text
247	H CONF			١	BLS MED NRV LOW	7	1	0
DAT	G CONF			ı	WRYLOW	7	l	
	C-AIR				815MED	X		
9:22	H-COWF			ſ	BLS MED NRV LOW	2	(
	G-CONF			l	NRVLOW	7	1	
TOY 162 DAT 9:58	60	411.	0	2	NRVLOW	9/	25	!
705162 DAT 10:01	60	411.	0	7	NRVLOW	7	25	
TO4163 514 10:07	Ø-AIR							
80:01	40	+11.	0	12	NRV LOLJ	12	33	
TOS163 514 10:01	Ø-41R							
01:01	60	411.	*	12	NRVLOW	7	44	
TOY164 DAT 10:12	60	411,	0	7/	NRVLOW	41	25	
pue								



Log File = 0728

Log File = 0759

Log File = 0958

Log File = 1027

Log File = 1027

Log File = 1439

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

NOTES:

1 Set agent generator for GD @ -30 C.

2 Run Standard curve using GD @ 1.972 ng/ul.

		LogFile
1	2145	0623
2	4189	0628
3	6276	0632
4	8064	0637
5	10284	0641

GE	Genera	tor Setting	gs
agent =	.03 cc/m	gen temp =	-30 C
dry air =	3.00 l/m	gen RH =	0 %
wet air =	0.00 l/m	mb temp =	20 C
agt temp =	0 C	amb RH =	0 %

- 3 Sample # 1, 20 sec @ 100 cc/min= 1053 nA = .029 mg/m3
- 4 Increase agent concentration
- 5 Sample # 2, 20 sec @ 100 cc/min= 3599 nA = .103 mg/m3
- 6 Sample #3, 20 sec @ 100 cc/min= 3983 nA = .114 mg/m3
- 7 Begin Trail # 1 @ .114 mg/m3 for ETG detectors.
- 8 Sample # 4, 20 sec @ 100 cc/min= 4428 nA = .127 mg/m3
- 9 Lower agent flow:
- agent = .08 cc/m
- 10 Begin Trail # 1 for MSS & Intellitec.
- 11 Sample # 5, 20 sec @ 100 cc/min= 4493 nA = .129 mg/m3
- 12 Sample # 6, 20 sec @ 100 cc/min= 9991 nA = .288 mg/m3
- 13 Set agent generator for GB @ -30C.

14

i	841
2	1767
3	2697
4	3526
5	4367

- 15 Sample #7, 20 sec @ 100 cc/min= 5857 nA = .160 mg/m3
- 16 Test Intellitec and MSS detectors.

Operator_____

Operator_____

Detector S/N	980206-64	Date:	8/13/58	
Software Ver.	M502B	Time:	8:24	
Location:	EPOEC-15LOG 35	ری	+524	
1. Initial Powe	er On			
Α.	Uncap the air inlet and air ex	haust. Place	charcoal filter ov	ver the inlet.
B.	Connect communication cab	le and begin '	"Logall" file.	
	Record datafile name		17	
C.	Turn horn volume to full (clo	ockwise)		
D.	Connect power and begin sto	pwatch.		
E.	Verify startup sequence.			•
			Pass	Fail
Display shows	s M43-APD		<u>~</u>	
Display shows	s the Software Version		<u> </u>	
Display shows	s LED TEST followed by test	patterns		
Display shows	S HORNTEST and horn beeps	twice	<u> </u>	·
Display shows	S SELFTEST		<u> </u>	
Display shows	s STANDBY and backflush b	egins	$\overline{}$	
Display shows	s READY within 30 minutes	after startup		
Record	Time 5, 40			
Display goes l	plank approx. 15 seconds after	r READY		
Tested by:	G. Loza		Date	6/13/5F

	ourth rest creek			
Detector S/N	986206-05	Date:	8/12/58	
Software Ver.	M502B	Time:	8:35	8:52
Location:	ERDEC-ALLYSIN			+52×
1. Initial Powe	er On			
A.	Uncap the air inlet and air ex	haust. Place ch	arcoal filter ov	er the inlet.
B.	Connect communication cabl	e and begin "L	ogall" file.	
	Record datafile name (Attach copy of data with test		-	
C.	Turn horn volume to full (clo	ckwise)		
D.	Connect power and begin sto	pwatch.		
E.	Verify startup sequence.		•	
Display shows Display shows Display shows	s the Software Version LED TEST followed by test properties: HORNTEST and horn beeps SELFTEST STANDBY and backflush be READY within 30 minutes as	twice gins	Pass	Fail
	olank approx. 15 seconds after	READY	<u> </u>	
Tested by:	G. Lozei		Date	8/4/98

a Entry Form	1					ba	bage (ا
rpose of test:	Test Location:	Date:	Operator:					

	Test Location:	Date:	Operator:			
+SIK EVIDER	7	3 5/c1/3	(10ta)			
SWver#:	SULB		Temp:			Chelly town
Sample		Conc/ma %Rh	Alarm	Chalno	2	Comment
			time	class/id/conc time	time	
8:24 Sea	Scanerp					+25,4
8.3r (+c.8	Hartsult	7	To No.	5		
4) LE:3			13/21	5		
t) 11:2			구 기	<i>O</i>		
8:39 (S	Grant Sall	3	Merten	Len		
J Cha.	Charle Ain					
y chu	Chark Air	7.				
3 H Cont	7		1			
ج	G sull		NA	Nav Gen 2		Lur Coun -Re-Xmil
5) ',			Mar Gar	4 2		
8,54 500	Starton					(25:3 - 15:55) (8:55:50)
	• •					
8:50 Hay	Man J Sanle		الماه بدد	7		
8:59 Har	Hart Sal	0	X	9		
9:01 Gent	لح		Nore	7	_	
9:02 Gam	سل		10000000000000000000000000000000000000	14 S		
3	کی		NRULLA	line 13		
- C	Church And		ME	0		
LOG1.WB1 update 11 Jun 97 1) (-			NO EN	3		

rpose of te	št		Test Location:	Date:		Operator:				
97/95 17.77	3	152m	をなりでと	36/01/3		7	5020			
Det#: 950206-07	مرمر		SWVer# SOLB		=0	·	Temp:			
					1 1	_				
DataFile#	Type	Time	Sample	Conc(mg %Rh	1	Alarm	Alarm	Chalng	$\overline{}$	Comment
	dat/sig						class/id/conc time	time	time	
704167	DAT		Chande. Aip	+25%						
		10.4. 14.14.	6-13	0.121	1.3%	20	War len	02	20	
704168	3/L	05:01	\$ 1 5	0.125		19	Mar Lin	(F)	20	11:01 OFFINE 0.125
704169	DAT									
		02:30:11	J.S.	0.125		20	(NAV Lew	23	20	
		10 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5-6	0.121		4)	cher hu	46	30	
To+170	DAT	K3/E3	Clean Aik							
		74:21	9	0.126		cxi	NRV Law	0211	20	ļ
12/17/	SIL	C4.41	Q.S	0.129		7	NAC GEN	7	20	
Totile	047	15 T		•		·				
,			6-0	0.118		((2:36	1	
704173		DAT (4:34	An.							
		32:36:4)	45	O.118		ナ	MRS LON	Ž	23	
7										
LCT WB1 ale 11	ate	16 Um pt	,						-	

page ___ of ___

× / 1/2 / 2	2000		ו באן בטרמווטוו.	Dale.	;	Operator.				
E74.2		75754	ELINER	15/11/2	صا	70	1070			
Det# 950 201-45	<i>b</i> ×		SWver#:			-	Temp:			
DataFile# T	Type	Time	Sample	Conc(mg %Rh		Alarm	Alarm	Chalng	Clean	Comment
	150			,		1	d/conc	>	time	
197501	1740	DA7 10044	Clean Aik	+224						
		54:01	7J-5	0.121	767	77	NRV LOW	17	21	
705168 5	215	JS;0)	(J-1)	0.17		20	MRV Lew	10	23	(1:4) GB Cm 0.125
7 69/507	DAT	93:)	Clay Ack							
		13:15	Sig	521.0	-	20	With Law	cı	07	
		32.251(1)	20	0.125		5	MAC Low	(a)	72	
705170	DAT	13:47	Clay Ain							
		05:11	J.	9210		00	ind ten	ک	2	
LISOL	2,5	1417	6-0	0.129		G	MRV Lun	6	7	
1	OAT	047 (4:27	C(cg.AIR			-				
		37:41	9	0.118		ص	NRO La	ما	20	
2 History	DAT	4116	Ach							
		14:77:77	9	Dult		الم	IND. CL	صا	7	(on way detake

page 6 of A Check art ray Comment Clean Conc(mg %Rh Alarm Alarm Chalng down time class/id/conc time time War La (None Temp: Lote) Operator: 15/51/2 Date: <u>_</u> 6. . Test Location: 4524 ERIVE 7-12 1-12 9 Hent 60 0-0 e b SWver#: B Sample 4:4:17 のブラ (3:02 17:27 end ברוהידי WBT יוואמנפ דיל נווח 97 ():en 9.76 TOKET- 10AT 9:01 Time 10.6 Dan Whom Purpose of test:

(Shipse of test:

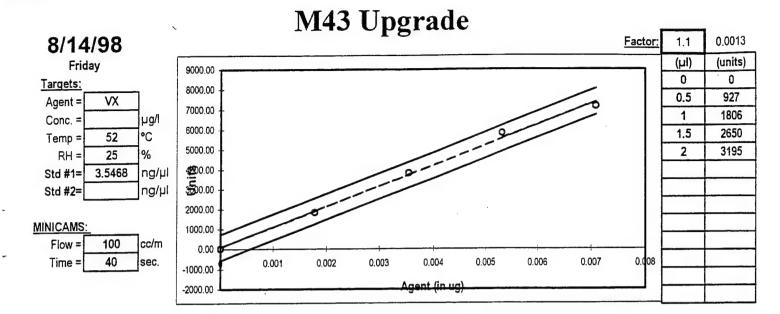
(Sh Type dat/sig 2 DAT -(AUY W) TAUS Oct DataFile#

Detector S/N	<u>980206 - 9</u> Date:	8-19-98	
Software Ver.		08:26	
Location: 💆	ERDEC E3510 TEM	· +52°C	FOLLOUINE
1. Initial Powe		11-HR SH	14TD0 WN
A.	Uncap the air inlet and air exhaust. Place	charcoal filter of	over the inlet.
B.	Connect communication cable and begin	-	
	Record datafile name	DAT	
C.	Turn horn volume to full (clockwise)		
D.	Connect power and begin stopwatch.		
E.	Verify startup sequence.		
		Pass	Fail
Display shows	s M43-APD	~	
Display shows	s the Software Version		
Display shows	LED TEST followed by test patterns		
Display shows	HORNTEST and horn beeps twice		
Display shows	SELFTEST		-
Display shows	STANDBY and backflush begins		
Display shows	READY within 30 minutes after startup		
Record	Time 2:52		
Display goes b	olank approx. 15 seconds after READY		
Tested by:	Herry	Date	8/14/98

Detector S/N	980206-3	Date:	8-17-7	7 8
Software Ve	er. <u>5.028-1</u>	Time:	08:34	
Location: _	ERDEL E3510			
1. Initial Pov	wer On			
A.	Uncap the air inlet and air e	xhaust. Plac	e charcoal filter	over the inlet.
B.	Connect communication cal	ole and begin	"Logall" file.	
	Record datafile name		DAT	
C.	Turn horn volume to full (cl	ockwise)		
D.	Connect power and begin st	opwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	vs M43-APD			
Display show	vs the Software Version		~	
Display show	vs LED TEST followed by test	patterns		
Display show	vs HORNTEST and horn beeps	s twice	_	
Display show	s SELFTEST		/	
Display show	s STANDBY and backflush b	egins		
Display show	s READY within 30 minutes	after startup	~	
Recor	d Time 3:5 &			
Display goes	blank approx. 15 seconds after	r READY		-
Tested by:	Itoeway		Date	8/11/98

Purpose of test:			Test Location:	Date:	Operator	or:		
Tort. evaluation	Jalus	the	ERDEC 3510	86-11-8		YEST		CHAMBER HYMIDITY APPROX
Det#: #5 & #4	44		SWver#:			Temp: ≁52	v,	
			5.028-1					\neg
DataFile#	Type	Time	Sample	Conc(mg %Rh	Alarm	class/id/conc time	Chaing down time	Comment
704174	DAT	6826	STARTUP				1 1	
704175	316	0830	C-A1R					4 MIN, AFTER STARTUP
401501	DAT	0834	STARTUR					
705175	516	5140840	C-AIR					6 MIN. AFTER STARTUR
704176	JA T	9480	6-41R					COUR. TESTS
		0850	C-AIR					
705176	DAT		C-AIR					
1								Auto CaL
104177	DAT	9:31:40				No ALAN	7	
		932:18				No Aron	ک	
		4:33:36	4			No from	~	
						No harm	2	
705177	240	9:36:33	3 H-CONE)			Nostew	5	
					Μ	> BL> LOL	~	
		9:32:23	3 K- CONF		2	NRVIOW	7	

	8-14-5P	Operator.	(2) E) E) emp: + 52	2		
5.628-1 Sample	Conc(mg %Rh	Alarm	Alarm Chalng		Clean down Co	Comment
VX	.055 262	time 32	Class/id/conc		time / 9	
VX	.655 26%	1 1	NRVIA	4	23	
CLEIN AIR						
VX	.055 26	15	NRVLOW	15/	26	
Com A.R						
VX	.05526	٠	NRJIOU	6	26	
VX	.05526	30	NRVLOW	30	3/	
VX	,05526	6/	NRVLOW	61	26	
		+				
					-	



Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Terri, Juan, Sonny & Kwok

NOTES:

1 Set agent generator for VX @ 52C and 25 % RH.

2 Run standard curve with VX @ 3.5468 ng/ul.

		Log file
0.5	927	815
1	1806	822
1.5	2650	829
2	3195	835

3 Sample # 1, 40 sec @ 100 cc/min = 1056 = .030 ug/l ????

4 Sample # 2, 40 sec @ 100 cc/min = 1817 = .055 ug/l log = 0955

5 Testing detectors

6 Sample # 3, 40 sec @ 100 cc/min = 1833 = .055 ug/l log = 1115

V	(Genera	tor Setting	js
agent =	110 cc/m	gen temp =	52.0 C
dry air =	2.10 l/m	gen RH =	26 %
wet air =	1.00 l/m	mb temp =	20 C
agt temp =	35 C	amb RH =	82 %

Operator____

Operator_____

Startup Test Checklist and Test Data Sheet

Detector S/N	980206-4	Date:	8-17-9	8	
Software Ver	5.028-1	Time:	13:05		
Location:	ERDEC E3510	TEMP:	0 °C	@ STARTU	.P.
		POWER	R OFF	a 8-14 /	1:30 +52
1. Initial Pow	er On				AT +25
A.	Uncap the air inlet and air ex				COLD 50 et.
В.	Connect communication cab	ole and begin	n "Logall" file.		
	Record datafile name		1.DAT	•	
C.	Turn horn volume to full (cle	ockwise)			
D.	Connect power and begin sto	pwatch.	•		
E.	Verify startup sequence.				
			Pass	Fail	
Display shows	M43-APD		<u> </u>		
Display shows	s the Software Version		<u> </u>		
Display shows	LED TEST followed by test	patterns	<u> </u>		•
Display shows	HORNTEST and horn beeps	twice			
Display shows	SELFTEST				
Display shows	STANDBY and backflush be	egins	<u> </u>		
Display shows	READY within 30 minutes a	ıfter startup	<u></u>		
Record	Time 2:50				
Display goes b	lank approx. 15 seconds after	READY	$\overline{}$		
Tested by:	G. Lozu		Date	8/17/8	58

Startup Test Checklist and Test Data Sheet

Detector S/N	980206-5 Date:	8-17-98	
Software Ver	. <u>5.028-1</u> Time:	13:10	*****
Location: 2	ERDEL E3510 TEMP	: 0 . 6	a STARTUP
1. Initial Pow	er On STORES	FOR 3	11:30 + 52 °C DAYS AT +25 °C
A.	Uncap the air inlet and air exhaust. Place	charcoal filter or	5.5 HR COLD SOAF ver the inlet.
B.	Connect communication cable and begin	"Logall" file.	
	Record datafile name	DAT	
C.	Turn horn volume to full (clockwise)		
D.	Connect power and begin stopwatch.		
E.	Verify startup sequence.		
		Pass	Fail
Display show	s M43-APD		-
Display show	s the Software Version		
Display show	s LED TEST followed by test patterns		
Display shows	s HORNTEST and horn beeps twice		
Display shows	S SELFTEST		404-7000-11-11
Display shows	s STANDBY and backflush begins		
Display shows	s READY within 30 minutes after startup		Suggest Mile Search Processed To
Record	Time 3:06		
Display goes l	olank approx. 15 seconds after READY	<u>~</u>	
Tested by:	G. Lozu	Date	8/17/98

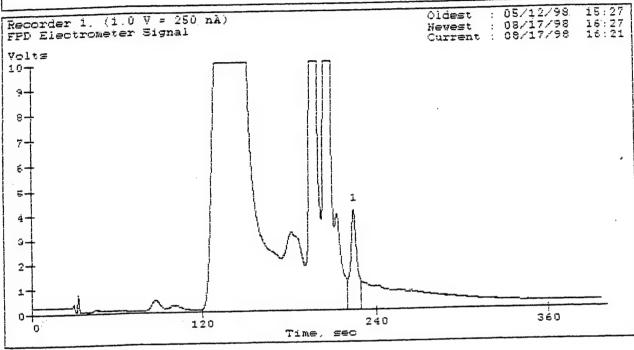
ずる #6 +5. P 7,9+ 980206-04 70-202036 357/25 190 061 348/267 にって 日フレス Comment cr:/ 27:0 22:00 Conc(mg %Rh Alarm Alarm Chalng down time class/id/conc time time NAV PIEI) משע לחק NA BAL DLS A. Temp: 507 07 Operator: 30 Ś 0% 16/11/8 70 200 Date: (4 ca. 1. sall SWVer#: 50LB Test Location: 4 62+ 1274:47 (- Cun + かられ Sample ロア 12:15:12 end rogr.war update 11 Jun 97 17:19 90 13.18 Time Type dat/sig 047 DAJ Data Entry Form Purpose of test: Start-2 TOS/18/ DataFile# 104181 Det#:

Data Emity Form	Ξ.			of of		Cherefor				
Purpose or test:	st:	30	Erles Location.	8/17	25	10 m	07°C			
)	SWver#: MSV4S	1) , 1	9		Temp:			
					$\overline{}$				Clean	
DataFile#	Type	Time	Sample	Conc(mg	%Rh	ے	Alarm Alarm	E.	down	Comment
	dat/sig					ııme	Class/ig/conc ulme		alle	
704182	DAT	03,50		りるし	%					2,1,6
		(3:5)	clean Ain	,						-
		15[1]	0+1	2,6		۲	Aus mel	7	So	
		30:41	Cls. A.K. (+0	7,5		و	ALS Med)	47	7,01
721507	DAT	43;61								
		(4)	Class Air							3,1%
		14:05	0+1	7,6		7	ערש דהת	7	4	
181 Sol	215	(4;t3	HD	[-93		Ń	Ols ten	5	33	
704185	515	N.17	40	(-93		5	OLS lew	5	47	
T05184	047	(4,4)	((ren Ai M							
		h:44:41	4	1.93		5	MLS Lew	ر	2	HOCA 14:50 (977/2)
to										
LOG1.WB1 update 11 Jun 97	update	11 Jun 97			-					

LOG1.WB1 update 11'Jun 97

Detit: State Purpose of test:	est:		Test Location:	Date:	Operator:	4 0			
184 Type Time Sample Conc(mg) %Rh Alarm Alarm Chaling Gun		ろ		ERNEC	5/1-1/2	70	30€		en puyed
18.5 DAT U. C C. Alm Alm Alam Chaling down Alm Alam Ala	Det#:			SWVer#: Solf			emp:		-
S DAT (6:2) C (ex, gin, box) Agin, time classificonc time time time time time time time time		<u> </u>	F			V miles	lorm	Clean	Command
5 DAT 16:00 C (ex, ain 16:00:10 16:11 14:11 15:11 16:	Datar lie#	lype dat/sig	ı ıme	Sample	conc(mg	ime	lass/id/conc	time	
DAT 1612 C122, A14 0.026 DAT 1612 C122, A14 0.0026 K6:12:19 VX 0.0026 The control of the cont	704185	DA		cley ain					
DA7 16:12 C (2c, A'y) 16:12.13 VX 0.026 16:12.14 VX 0.026 14:10pdate 11 Jun 97					0.026		MRV		Lupuyel UK
DA7 16.1 C (-εε, Α') C 0.02 (-γ. Α') C (-γ.									
DA7 16.1 C (-ec, A'N Ko:te:y VX									
- VX 0.026	Tusirs	DAT	1						
							Mur tan		Un puya LK
	.•						. 1		-
-									
-									
	end InG1.WR	t update	11 Jun 97						

			4.6.6	STATION 1
S/N 3043		08/17/98	16:21	3.2
61	VX(FPD)			
TWAG	5.80 1 720			
HEIGHT R.TIME WIDTH	224.7 3.4			
#T1,11				H = Help
1				



Monitor Serial Number 3043

Date 08/17/98

Sampling Station 1

Time

ŲΧ

TWAG

F. R. 18-98 AEJAJ Temp: 0°C To Sashidrone ti To Sas	8-18-98	Clean down Comment time Determinent time Clean Comment Clean Co
SWVerff. Time Sample Conc(mg %Rh Alarm Alarm Alarm Gassidiconc time Gassidico	Conc(mg %Rh Alarm Alarm Conc(mg %Rh Alarm Alarm 7	Clean down Comment time Brates Ree run overnight in anxional claubes Runitz i 23
1 Time Sample Conc(mg %Rh Alarm Alarm Classideconc till cog 35 Change R 7! If cog 4 Change R 7! If cog 5 Change R 7! If cog 6 Change R 7! If cog 7 Change	Alarm Alarm time class/id/conc	clean down betator han kee runn overnight in eminer clauser hanitz i 43
Type Time Sample Conc(mg %Rh Alarm	time class/id/conc	down Comment lime Detector has been runne Leader of the surviounce Leader humitiz is 63 -
davig time classifdconc ti 2AT 0835	time class/id/conc tim	Detector have been summer the commended of the bear of the control
215 0835 CHAMBER 71 316 0838 CHAMBER 71 316 0839 CHAMBER 71 316 0841 CHAMBER 71 316 0841 CHAMBER 71 316 0841 H CONF 71 316 0844 H CONF 71 316 0844 H CONF 71 316 0845 K CONF 71 317 - BISMED 317 0927 K CONF 71 318 0928 W X - 0.04 318 1004 AIR 3007 0 0.37 WRV LOW 316 10:25 W X 0.09 0 0:23 WRV LOW 316 10:25 W X 0.09 0 0:23 WRV LOW 316 10:25 W X 0.09 0 0:23 WRV LOW 316 10:25 W X 0.09 0 0:23 WRV LOW 316 10:35 W X 0.09 0 0:37 WRV LOW 316 10:35 W X 0.09 0 0:37 WRV LOW	- 815 MED	Determ han been runne change in emissione danker @ 0°C. Abi
31¢ 0838	— 815 MED	chan by anist is 63
5 247 0839 CHANBER 71 5 36 0841 CHANBER 71 DAT 0844 H CONF 71 - BLSMED 0845 & CONF 71 - BLSMED 0852 & CONF 71 - BLSMED 0854 & VX 0.099 0 1:23 MRV LOW 0856 (0:54 VX 0.099 0 1:23 MRV LOW) 0867 & VX 0.099 0 1:23 MRV LOW 11:10:43 VX 0.007 0 0:48 MRV LOW	- 815 MED	Mar la Co C C C L Si
31¢ 0841 CHAMBER 71 DAT 0844 H CONF 71 - BLSMED DAT 0845 & CONF 71 - MAYLOW DAT 0845 H CONF 71 - BLSMED O852 & CONF 71 - BLSMED O852 & CONF 71 - MAYLOW DAT 1004 CONF 0.09 0 1:23 WRYLOW SIG 10:35 VX 0.09 0 1:23 WRYLOW SIG 10:35 VX 0.09 0 1:23 WRYLOW DAT 11:10 DAT 11:10	- 815 mED	Ander huming is 63
DAT 0844 H CONF 71 - BISMED DAT 0845 & CONF 71 - BISMED 0852 & CONF 71 - BISMED 0852 & CONF 71 - BISMED 0852 & CONF 71 - MRV10W DAT 0927 CONF 009 0 1:23 MRV10W SIG 10:25 VX 0.09 0 1:23 MRV10W SIG 10:35 VX 0.09 0 1:23 MRV10W DAT 11:10 DAT 11:10 DAT 11:10	- 813 MED	
0845 & CODE 71 - MRY LOW DAT 0844 H CONF 71 - BLSMED 71 - WRY LOW DAT 0852 & CONF 71 - WRY LOW DAT 0928 VX - OH 09 0 1:27 WRY LOW DAT 1004 VX - OH 09 0 1:23 WRY LOW DAT 10:05 VX 0.09 0 0:37 WRY LOW DAT 11:10 3047 11:10 3047 11:10 3047 11:10 3047 11:10		
DAT 0848 H CONF 71 - BLSMED 0852 G CONF 71 - MRV LOW DAT 0927 CONF 0.09 0 1:23 WRV LOW SIG 10:25 VX 0.09 0 0:37 WRV LOW SIG 10:25 VX 0.09 0 0:37 WRV LOW SIG 10:35 VX 0.09 0 0:48 WRV LOW DAT 11:10 DAT 11:10	1	1 1
0852 & Cour 71 - NRV LOW DAT 0927 & Cour 0.099 0 0.00 0 0.	1	
297 0927 Cosso. 2002 VX 0.09 0 1:27 NRV LOW 2005 VX 0.09 0 0:37 NRV LOW 516 10:35 VX 0.09 0 0:37 NRV LOW 516 10:35 VX 0.09 0 0:37 NRV LOW 516 10:35 VX 0.07 0 0:48 NRV LOW 3007 11:10	1	
297 0927 Coro. 0.099 072 0.094 0 1:27 NRV LOW 0.094 0 1:27 NRV LOW SIG 1004 0.09 0 0:37 NRV LOW SIG 10:25 VX 0.09 0 1:23 NRV LOW SIG 10:34 VX 0.07 0 0:48 NRV LOW DAT 11:10 DAT 11:10		3
294 VX - 0.09 0 1:27 NRV LOW DAT 1004 AIR 0.09 0 0:37 NRV LOW SIGN 1005 VX 0.09 0 0:37 NRV LOW SIGN 10:25 VX 0.09 0 1:23 NRV LOW SIGN 10:29 VX 0.07 0 0:48 NRV LOW DAT 11:10		
247 1004 Cous — 1005 VX 0.09 0 0:37 MRV LOW 516 10:25 VX 0.09 0 1:23 WRV LOW 516 10:54 VX 0.07 0 0:48 WRV LOW 347 11:10 347 11:10	721 0 1127	22 CONCENTRATION HAMMOND
516 10:25 VX 0.09 0 0:37 NRV LOW 516 10:25 VX 0.09 0 1:23 NRV LOW 516 10:54 VX 0.07 0 0:48 NRV LOW DAT 11:10 0.07 0 0:49 NRV LOW	(
516 10:25 VX 0.09 0 1:23 NRV LOW 516 10:54 VX 0.07 0 0:48 NRV LOW DAT 11:10 0.07 0 0:49 NRV LOW	0 0:37	7 0.23
316 10:54 VX 0.67 0 0:48 NRV LOW DAT 11:10 11:10:43 VX 0.67 0 0:49 NRV LOW	0 1:23	8 0:23 ANDCAL (2 t= 1 MIN INTO CHALLANGE
DAT 11:10 11:10:43 VX 0.07 0 0:49 NRV LOW	0 0:48	۲۲:0 8
WRV 10:43 WX 0.67 0 0:49 NRV 104		ALTOCAL - POS RX SHIFTS
	64:0 0	0:23 CONDITION
TOS 191 DAT 11:31 CONS	1	
Jun 37 VX 0.67 0 0:14 NRV LOW	0	84:0

APPENDIX C. GOVERNMENT EVALUATION TEST DATA: INTERFERENCES

Blank

Test Location:	M-FIELD			Inter	rference Mat	erial: 0	u Lë Ades	GAS EX
Date:	8-31-98			Ope	erator.	GWU	/ GL	
Temperature:	90°F			Wea	ather.	55 R	H · 6	MPH
	Det S/N 980206 - 7		S/W Ver 2 B - I			et S/N	5 5	SM Ver
Pre-test	Alarm	Response	Clear Time		Alaı	rm)	Respons	Clear Time
H	Yes ☑ No □	BLS NES			Yes 😡	No 🛘	BLSLE	ماد
G	Yes 🖭 No 🗆	NRU HI			Yes 🔽	No 🗆	NRV M	
TNo	Distance /0	Chall. Time	2:00] [Distance	10'	Chall. Tim	ne 2,00
Trial No.		ponse	Clear Time	<u> </u>	Alarm		sponse	Clear Time
Time	Yes D				Yes 🗆			
1356	No D				No D			
Comments	T04202.DA	7			TO	520	DAT	
) Г	Distance		' Chall. Tin	ne 2
Trial No.	Distanœ / 0	/ Chall. Time	2 : 00 Clear]	Distance	10		Clear
2	Alarm Res	sponse	Time	1	Alarm	Re	sponse	Time
Time	Yes 🗆			1 1	Yes 🗆			
1403	No 🗹			ן נ			-	
Comments								
Trial No.	Distance j D	/ Chall, Time		٦ [Distance	10	Chall. Ti	me
3		sponse	Clear Time	֓֟֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֡֓֓֓֡֓֓	Alarm	· Re	esponse	Clear Time
Time	Yes 🗆			1	Yes 🔲			
1407	No D			ال	No D			
Comments								•
			Clear Time		Alan	m	Respons	e Clear Time
Post-test	Alarm	Response		I_				
Post-test H	Alarm Yes No 🗆	Response			Yes 🗆	No 🗆		

Test Location:	M-FI	£ 10	• .	Interference f	Material:	DIESEL	EXHAUS
Date:	8-31-9			Operator:	4W	182	
Temperature:	90 F					H 50%	
	980206	- 4 9:	SM Ver 5,028 -1 50206-5	92	Det S/N	4 5	SM Ver
Pre-test	Alarm	Response	Clear Time		larm	Response	Clear Time
H	Yes P No			Yes 🖼			,
G	Yes 🗹 No [000 20		Yes 🗗		NRU HI	
Trial No.	Distance	10 Chall. Time	2'00"	Distance	10	Chall. Time	2:00
1	Alarm I	Response	Clear Time	Alarm	Re	sponse	Clear Time
Time	Yes 🗆			Yes 🗆	/		
2:41	No 🖼			No 🖸			
Comments	T04204	DAT		•	T05	204.D	AT
		- 12 - 12 - 12 - 12 - 12 - 12 - 12 - 12					
Trial No.	Distance 10	/ Chall. Time	2:00	Distance	10	Chall. Time	2:00
2_	Alarm F	Response	Clear Time	Alarm	Re	sponse	Clear Time
Time	Yes 🗆			Yes 🗆	-		
2:55	No E			No 🖸			
Comments							
Trial No.	Distance /0	Chall. Time	2;00	Distance	10	/ Chall. Time	2:00
3	Alarm R	Response	Clear Time	Alarm	Re	esponse	Clear Time
Time .	Yes 🗆			Yes 🔲			
3:01	No 🔯			No 12			
Comments	T04205	5, 31E			T05	205,3	516
-		_	Clear			_	Clear
Post-test	Alarm	Response	Time	Alan		Response	Time
Н	Yes No No			Yes □	No 🗆		
G 1	Yes □ No □		1	1 162 T	No 🗆		1 1

SEE PRETEST - GASVAPOR

Test Location:	ERDEC M-FIELD	•	Interference Material: GAS VAPOR
Date:	8-31-98		Operator: GW/GL
Temperature:	+93 F		Weather: 46 % 5 MPH
	Det S/N 980206 - 4 5.	S/W Ver 02B-1	Det S/N S/W Ver 5.028-1
Pre-test H G	Alarm Response Yes ☑ No □ Bis ioù Yes ☑ No □ NRV H I	Clear Time	Alarm Response Clear Time Yes No D BLS LOW Yes No D WRV M D
Trial No.	Distance 5 Chall. Time Alarm Response Yes No	2 ′00" Clear Time	Distance 5 Chall. Time 2 00 " Alarm Response Clear Time Yes No No
3:25 Comments	T04206.DA		T05206.DAT
Trial No. 2 Time 3;3/	Distance 5 Chall. Time Alarm Response Yes No Clear Time	Distance 5 Chall. Time 2 00 " Alarm Response Clear Time Yes No 12	
Comments			
Trial No.	Distance 5 Chall. Time Alarm Response	Clear Time	Distance 5 Chall. Time 2 '50" Alarm Response Clear Time
3:39	Yes 🗆		Yes D No D
Comments _	T04207, 316		T05207, 516
Post-test	Alarm Response Yes No	Clear Time	Alarm Response Clear Time Yes No
G	Yes No D	·	Yes No C
	SE	E PRE	-TEST BURNING GAS

Test Location:	M-FIELD	• .	Interference Material: Burning GAS
Date:	8-31-98		Operator: $4\omega/4L$
	+ 93		Weather:
	Det S/N 980206 - 4	S/W Ver	Det S/N 980206-5 5.028-1
Dec toot	Alarm Respons	Clear Time	Alarm Response Time
Pre-test H	Yes No D BL3 L		Yes D No D Bis Low
G	Yes P No D NRV ME		Yes IN NO IN NRV HI
Ü	17-10-1710		Distance /5 Chall. Time 3 00 "
Trial No.	Distance / 5 Chall. Tim		Distance / 3 Chair. Time 3 CD
i	Alarm Response	Clear Time	Alarm Response Time
Time	Yes 🗆		Yes 🗆
3:58	No IE		No D
Comments	T04208.	DAT	T05208.DAT
	Distance 15 Chall. Tim	e 3:00	Distance 15 Chall. Time 3;50
Trial No.	Alarm Response	Clear Time	Alarm Response Time
Time	Yes 🗆		Yes 🗆
4:10	No IV		No 152
Comments			
	Distance /5 Chall. Tin	ne	Distance /5' Chall. Time
Trial No.		Clear	Clear
	Alarm Response	Time	Yes 🗆
Time	Yes 🗆		No 🗷
4:21			T05209.516
Comments	T04209, 51	4	103 20 1.3.3
	Alarm Response	Clear Time	Alarm Response Time
Post-test	Alarm Response		Yes 🗆 No 🗆
Н	Yes No D	_	Yes No D
G		Po- T	EST DIESEL VAPOR
	ء ئے ل	1 KG - 16	Micsel Mor

							<i>3</i>		1/20-
Test Location:	<u> M - 1</u>	TIELD						IESEC I	
Date:	8-31-	98			Operator:		,	164	
Temperature:	+9	3 F			Weather.		48%	5 N	PH
_		et S/N 206 - 4	,	SM Ver			t S/N 1206 - 5		62B - 1
Pre-test	Ala	m	Response	Clear Time		Alam	n	Response	Clear Time
Н	Yes 🗔	No 🗆	BLS LO	W	Yes	Q /		BLS LOW	
G	Yes 🗹	No 🛘	NRV LO		Yes	U	No 🗆	NRVLOL	
Trial No.	Distance	5'	Chall, Time	2100	Distan	ice	5'	Chall. Time	2:00
THE THE	Alarm	Res	ponse	Clear Time	Alarr	n	Res	ponse	Clear Time
Time	Yes 🛘				Yes				
16:30	No 🎞				No	取			·
Comments	7	042	10 .DAT	_		I	052	10.DAT	
	Distance	5'	Chall. Time	2:00	Dista	nce	51	Chall. Time	Z:00
Trial No.	Alarm		sponse	Clear Time	Alar	m	Res	sponse	Clear Time
Time	Yes 🛚				Yes				
16:56	No 🔼				No				
Comments									
Trial No.	Distance	5'	Chall, Tim	ne	Dist	ance	5'	Chall. Time	
3	Alarm	Re	esponse	Clear Time	Ala	rm	R	esponse	Clear Time
Time	Yes 🗆				Yes				
17:02	No 🔀				No	×			
Comments	7	04 21	1514			70	5 41.	314	•
				Clear	7 [Clear
Post-test	Alar	m	Response			Ala		Response	Clear Time
	Alar	m No 🗆	Response		Yes	D	Mo 🗆	Response	

Test Location:	M-Field	- .	Interference Material: Diesel Runny
Date:	8-31-98	_	Operator:G_L
Temperature:	473°F	-	Weather: 4870AH 5 mell
	Det S/N 980206-04	S/W Ver 5.028-1	Det S/N S/W Ver 9 8 0 2 0 6 - 0 5 S,0 2 18 - 1
Pre-test	Alarm Respon	Clear Time	Alarm Response Time
Н	Yes No D BW [Uni	Yes A No O BUS CON
G	Yes PS NO NRV	Lun	Yes DX NO 11 17RV Low
	Distance 15f7 Chall. Tin	me 2300	Distance /5f7 Chall. Time 2:00
Trial No.	Alarm Response	Clear	Alarm Response Time
Time	Yes 🗆		Yes 🗆
17:13	No 💢		No 🔯
Comments	TO4212. DAT	1	TO5212. DAT
Trial No.	Distance (5 fr Chall. Ti	ime	Distance / 5 T Chall. Time
2_	Alarm Response	Clear Time	Alarm Response Clear Time
Time	Yes 🗆		Yes 🗆
17:21	No. E	1	No 🖾
114	No 🔯		
	NO ES		
Comments		ime	Distance Chall. Time
		Clear Time	Distance Chall. Time Alarm Response Clear Time
Comments	Distance Chall. T	Clear	Alarm Response Clear Time Yes
Trial No. Time	Distance Chall. T	Clear	Alarm Response Clear Time Yes No No No No No No No No
Comments	Distance Chall. T Alarm Response Yes	Clear	Alarm Response Clear Time Yes
Trial No. Time 1):26	Distance Chall. T Alarm Response Yes No No	Clear	Alarm Response Clear Time Yes No No No No No No No No
Trial No. Time 1):26	Distance Chall. T Alarm Response Yes No No	Clear Time	Alarm Response Clear Time Yes D No DY 7 o S 213. SIL Alarm Response Clear Time
Trial No. Time 1):26 Comments	Distance Chall. T Alarm Response Yes No Toy 213 SIF	Clear Time	Alarm Response Clear Time Yes D No D 7 o S 213. SIL

Test Location:	M-Field			Interference	Material:	eru seu-	Vapon
	8-31-98				G.L.		
Temperature:	+9708					1 SM	? <u>U</u>
	Det S/N 980206-6		SW Ver		Det S/N 980 20 (-		5MVer 025-1
Due Appt	Alarm	Response	Clear Time		Alarm	Response	Clear Time
Pre-test H	Yes 🕱 No 🗆	BLS La		Yes	Ø No □	BLS Lo	n
G	Yes ☑ No □	NRULO		Yes	DL No □	MRU H	i
•							
Trial No.	Distance 5-fc	Chall. Time	2:10	Distanc	* Sfr	Chall, Time	
1	Alarm Re	sponse	Clear Time	Alarm	Res	sponse	Clear Time
Time	Yes 🗆			Yes	1		
17:37	No K			No J	ৰ্		· · · · · · · · · · · · · · · · · · ·
Comments	7042141	DAT			TO5214	DAT	
Trial No.	Distance 5 f7	Chall. Time	2:0	Distan	œ Sfr	Chall. Time	7:00
2	Alarm Re	sponse	Clear Time	Alam	n Re	sponse	Clear Time
Time	Yes 🗆			1 1			
17144	No 🔼			No			
Comments							
	Distance 5 +	Chall, Time	2:00	Dista	nce 5 tr	Chall. Time	e 2:00
Trial No.	Distance 3 (Clear	$\exists \vdash =$			Clear
3	Alarm Ro	esponse	Time	Alar	m R	esponse	Time
Time	Yes 🗆			Yes			
17:49	No ISK			No	Ø		
Comments	T042	15.SIL		7	05 215.	311	
			Clear			Persone	Clear Time
Post-test	Alarm	Response	Time	-	Alarm	Response	711116
н	Yes No D			Yes			_
G	Yes No 🗆			Yes	□ No □	<u> </u>	

								_	
Test Location:	M-Fiel	14		Interferen	ce Mat	erial: K-c	ProJane	Aun.	רות
Date:	8-71-98	<u> </u>		Operator	_ <	-0 to			
Temperature:	900F			Weather					
Temperature.				1 .				SW	v(or
	Det S/N	1 1	S/W Ver			et S/N D 20 6-0	2 2	5/W -1215	
	980206	- 64	502B-1] [700	20 6-0	21 14	1210	
			Clear	7					Clear
Pre-test	Alam	Respons	Time 2	┦ ├—	Alaı		Response		Time
н	Yes 🗵 No	10-7-	السال		<u> </u>	No 🗆	MRV M		
G	Yes 🛛 No	- NRUM	1ED				(N/CV)	109	
				Dista	nce	15/5	Chall. Tim	e >:	(0)
Trial No.	Distance 15	Chall. Tim	2.00			13 10		<u> </u>	Clear
	Alarm	Response	Clear Time	Ala	m	Res	ponse		Time
Time	Yes 🗆			Yes No	D EX				
18:02	No D				· \	5 216	DA-7	L	
Comments	7047	16 DAT			10	> 10.	UA)		
				Dista	2000	125	_ Chall. Tin	ne 7	10
Trial No.	Distance 15	fr Chall. Tim	ne 2:03		1	13-4		<u> </u>	Clear
2	1		Clear	ءلم ا	rm	Res	sponse		Time
<u></u>	Alarm	Response	Time						
Time	Yes 🗆	Response	Time	Yes					
Time (6:07		Response	ime		囚				
Time	Yes 🗆	Response	ime	Yes	1				
Time (5:07	Yes 🗆	Response	1 me	Yes	図				2
Time (5:07	Yes 🗆			Yes	1	1517	Chall. Ti	me	2;ev
Time (6:07) (8:07) Comments	Yes Distance (S	ተ Chall. Tin		Yes No Dist	図		Chall. Ti	me	2.₺∨ Clear Time
Time (8:07 Comments Trial No.	Yes D No 3 2		ne 2' vV	Yes No Dis	tance			me	Clear
Time (5:07 (8:07 Comments Trial No.	Yes Distance (S)	↑ Chall. Tin Response	ne 2! vV Clear Time	Yes No Dist Al Yes	tance	Re	esponse	me	Clear
Time (8:07 (8:07 Comments Trial No.	Yes Distance (S) Alarm Yes D	↑ Chall. Tin Response	ne 2! vV Clear Time	Yes No Dist Al Yes	tance	Re	esponse	me	Clear
Time (5:07 (8:07 Comments Trial No. Time (8:14	Yes Distance (S) Alarm Yes D No M To Y 217	↑ Chall. Tin Response	ne 2' vV	Yes No Dist Al Yes	tance	Re	esponse	me	Clear
Time (5:07 (8:07 Comments Trial No. Time (8:14	Yes Distance (S) Alarm Yes D No M To Y 217	↑ Chall. Tin Response	ne 2' vv Clear Time	Yes No Dist Al Yes	tance	5 217	esponse 2 S/L LJ		Clear Time
Time (5:07 (8:07 Comments Trial No. Time (8:14	Yes D No S Alarm Yes D No S Alarm Alarm	Response Response	Clear Time Clear Time Clear Time	Yes No Disi All Yes No	tance	5 217	S/L LJ Respons		Clear Time
Time (\$:07 Comments Trial No. Time (\$:14 Comments Post-test H	Yes Distance (S) Alarm Yes D No X Alarm Alarm Yes No I	Response Response Response	Clear Time Clear Time Clear Time	Yes No	arm To	5 217	Response Respons	se (£()	Clear Time
Time (8:07 Comments Trial No. Time (8:14 Comments	Yes D No S Alarm Yes D No S Alarm Alarm	Response Response Response	Clear Time Clear Time Clear Time	Yes No	annce Alai	5 217 (11 hy	Response RESPONSE RESPONSE	se (£()	Clear Time

						. ~	05 16		
Test Location:	MFIELL			Interfe	rence Mat	erial:	P8 V4	porc	
Dates	9/+158			Opera	tor:	607	ره.		
Date:	-711			Weath	ner:	6853RH	71	npit	
Temperature:	7715			***************************************		<u> </u>			
	Det S/N		S/W Ver		С	et S/N		SW\	/er
	980266-0	+ ms	020-1		99	30 ZuG-U	5 10	SUZ	0-1
	7 80206			;					
		T	Clear	1 [D		Clear Time
Pre-test	Alarm	Response	Time	┧┟	Ala		Response		Time
н	Yes ⊠ No □	BLS ME	0	→	Yes 🔯	No 🗆	IS LS M		
G	Yes ⊠ No □	NRV MI	=0		Yes 🔯	No 🗆	NRU L	on	
									\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Trial No.	Distance 5 fc	Chall. Time	2:00		istance	Sti	Chall. Tim	e 2	: 60
Tital No.			Clear Time		Alarm	Res	ponse		Clear Time
	,	sponse	Time		es 🖾	NRV			
Time	Yes 🔯 (VILV	Lon			lo 🗆				
8:20				_	70	5219	, DAT		
Comments	704219	DA7							
				7 [Chall, Tin	ne	
Trial No.	Distance	Chall. Time	e 	<u> </u>	Distance		Olibil. The	T	Clear
2			Clear Time		Alarm	Re	sponse	1	Time
	I Alessa I Ke	esponse							
Time	7.1.2.1.1	esponse	,,,,,	┥ ╎	Yes 🛘				
Time	7.1.2.1.1	Low			Yes □ No 🔯				
Time 8.15	Yes 🛭 NRV								
	Yes 🛭 NRV								
8:19	Yes 🛭 NRV	Low			No 🔯		Chall T	ime	
8:19	Yes 🛭 NRV						Chall. T	ime	Clear
8.15 Comments Trial No.	Yes 🛭 IN (LV No 🗆 Distance	Low Chall. Tim			No 🔯	R	Chall. Ti	ime	Clear Time
6.15 Comments Trial No.	Yes 🛭 IN (LV No 🗆 Distance	Low	ne Clear		No 💆	R		ime	
Comments Trial No. Time	Yes IN (LV No Distance Res R	Low Chall. Tim	ne Clear		Distance Alarm	R		ime	
6.15 Comments Trial No.	Yes IN (LV No	Chall. Timesponse	ne Clear		Distance Alarm Yes		esponse	ime	
Comments	Yes IN (LV No Distance Res R	Chall. Timesponse	ne Clear		Distance Alarm Yes			ime	
Trial No. Time	Yes IN (LV No	Chall. Timesponse	ne Clear		Distance Alarm Yes		esponse	ime	Time
Trial No. Time 8:15 Comments	Yes IN (LV No Distance Alarm R Yes No No No No No No No N	Chall. Timesponse	Clear		Distance Alarm Yes No No No No No No No No		esponse		
Trial No. Time E.J. Comments Post-test	Yes IN RU No Distance Alarm R Yes No No No No No No No N	Chall. Timesponse	Clear		Distance Alarm Yes No No No No No No No No	705 7	esponse		Time
Trial No. Time 8:35 Comments	Yes IN (LV No Distance Alarm R Yes No No No No No No No N	Chall. Timesponse	Clear		Distance Alarm Yes No Al	705 g	esponse		Time

Test Location:	M-Fie	14			Inter	erence Mat	erial: Jf	Ty Kurn	145
	9/1/98		···-		Ope	rator:	L020.	<u>s</u>	
Temperature:	74°F				Wea	ther:	65%, pH		
	Det S/1 9 % 206		SM M 802	V Ver D-(et S/N 206-05		SW Ver
Pre-test	Alarm	Re	esponse	Clear Time		Ala	rm	Response	Clear Time
H	Yes ⊠ No	O BL	s Live			Yes 🗹	No 🗆	BLS ME	
G	Yes 🔼 No	D NR	V MED		JL	Yes 🔯	No 🗆	MRV LU	W
		Ch:	all. Time 2	L)ω] [Distance	15 fe	Chall. Time	
Trial No.		Response		Clear Time	ן ן	Alarm		ponse	Clear Time
Time	Alarm Yes	Response			1	Yes 🗆			
8:43	No E				JL	No 🗷			
Comments	7042	21. DAT				To	5 221. (DAT	
Comments									
	Distance	Ch	all. Time		7 [Distance		Chall. Time	
Trial No.	Alarm	Response		Clear Time	֓֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	Alarm	Res	sponse	Clear Time
Time	Yes 🗆				7 [Yes 🗆	·		
·8:56	No 🔯					No 🗵			
Comments									
					7			Chall. Tim	10
Trial No.	Distance	CH	nall. Time		_	Distance	 	Citali. 1111	Clear
3	Alarm	Response		Clear Time		Alarm	Re	esponse	Time
Time	Yes 🗆					Yes □ No ☑			
210	No K					NO LE		- A - N/4	
Comments	Toy 22	2 31/2					105 2	22.316	•
					· · · · · · · · · · · · · · · · · · ·				
	Alarm	Re	sponse	Clear Time		Ala	rm	Response	Clear Time
Post-test H	Yes No					Yes 🗆	No 🗆		
n					1	Yes 🗆	No 🛘	l	

Test Location:	MEG	.[]			Int	terference Mate	rial: <u>Cav</u>	bull bu	1641
Date:	1105				O	perator:	L09	201	
Date.	-4313					leather.			
Temperature:									
		et S/N		S/W Ver		De	et S/N		S/W Ver
		0206-04	ms	5020-1		950	206-05	ms	1020-1
	181	0500-01		,020					
				Cle	ar				Clear Time
Pre-test	Ala	m	Response	Tim	e	Alan		Response	
н	Yes 🗵	No 🗆	13LS 1	41		Yes ⊠	No 🗆	BLS LOW	
G	Yes 💆	No 🗆	MRU	16()		Yes 💆	No 🗆	MRV Lu	<u>u </u>
			CO L	UW					
Trial No.	Distance		Chall. Time	•		Distance		Chall. Time	
mai No.				Clear			Per	ponse	Clear Time
	Alarm	Res	ponse	Time	_	Alarm	Nes	polise	
Time	Yes 🗆				-	Yes □			
9:16	No 🔯		1			<u> </u>		* . 7	
9:19 Comments	TOY	223. 0	A7			105	223	DAI	
Trial No.	Distance		Chall. Tim	e		Distance		Chall. Time	
2				Clea			Per	sponse	Clear Time
	Alarm	Re	sponse	Time		Alam	110	Sponse	
Time	Yes 🗆					Yes 🗆			
9141	No 🗷								
Comments	9:44 90	170 CG							
	Distance		Chall. Tin	ne		Distance		Chall. Tim	e
Trial No.				Clea	ır				Clear Time
3	Alarm	Re	esponse	Tim	e	Alarm	R	esponse	Time
						Yes 🗆			
Time	Yes 🗆			i		1 h i	1		
Time 915)	Yes 🗆					No D			
9:57	No 🗵	224 SI	j.G			7	05214.		
	No 🗵	224. 51	j.c-			7	or 214,		
9:57	No 🗵	124 SI	56			7			Clear
915) Comments	No 🗵		Response	Cle		7	šr Cdl		
9:57	No B					7	šr Cdl	nn_	

Test Location:		=1219			inte	rference Ma	terial:	Voul, b	V17175
Date:	5/1/2	8			Оре	erator:	Low		
Temperature:	7 846				We	ather:	595011		
					_				S/W Ver
	D	et S/N		S/W Ver			Det S/N	.	
	990	206-04	M	5021-1	ل	98	206-05	149	5020-1
			_	Clear	\sqcap	Ala	rm	Respons	Clear e Time
Pre-test	Alar		Response	Time	-	Yes 🖾	No 🗆		
н	Yes 🔀	No 🗆	BLS7 M	F/1	-			BU ME	
G	Yes 🔀	No 🗆	NEV L	n		Yes 🔯	NO LI	NRV L	FD
	Distance	3545	Chall. Time	е	\neg	Distance	15tr	Chall. Tim	e
Trial No.		<u> </u>		Clear					Clear
	Alarm	Res	ponse	Time	_	Alarm	Res	ponse	Time
Time	Yes 🗆					Yes 🗆			
10:15	No 🔯					No 🗵			
	Tav	1215.	042			7	05215	DAT	
Comments	10	1 2. 7 .	VAI						
								Chall Tin	
Trial No.	Distance		Chall. Tim	e		Distance		Chall. Tin	
Trial No.	Distance		Chall. Tim	Clear			Re		Clear
Trial No.	Distance	Res	Chall. Tim			Alarm	Re	Chall. Tin	
	Alarm Yes	Res		Clear		Alarm Yes	Re		Clear
2	Alarm	Res		Clear		Alarm	Re		Clear
2 Time (0:20	Alarm Yes	Res		Clear		Alarm Yes	Re		Clear
Z Time	Alarm Yes	Res		Clear		Alarm Yes	Re		Clear
2 Time (0:20	Alarm Yes	Res		Clear		Alarm Yes No	Re	sponse	Clear Time
Time (v:10) Comments	Alarm Yes	Res		Clear Time		Alarm Yes	Re		Clear Time
Time (0`.20 Comments Trial No.	Alarm Yes No		sponse Chall. Tim	Clear Time		Alarm Yes No Distance		sponse Chall. Ti	Clear Time
Time (v:10) Comments	Alarm Yes No		sponse	Clear Time		Alarm Yes No No Distance Alarm		sponse	Clear Time
Time (0`.20 Comments Trial No.	Alarm Yes No Distance Alarm Yes		sponse Chall. Tim	Clear Time		Alarm Yes No Distance Alarm Yes		sponse Chall. Ti	Clear Time
Time (v:10) Comments Trial No.	Alarm Yes No Distance		sponse Chall. Tim	Clear Time		Alarm Yes No Distance Alarm Yes No Ro	sponse Chall. Ti	Clear Time	
Time 10:20 Comments Trial No. Time N:14	Alarm Yes No No Alarm Alarm Yes No Re	chall. Tirr	Clear Time		Alarm Yes No Distance Alarm Yes No	sponse Chall. Ti	Clear Time		
Time (v:10) Comments Trial No. 7	Alarm Yes No No Alarm Alarm Yes No	chall. Tirr	Clear Time		Alarm Yes No Distance Alarm Yes No Ro	sponse Chall. Ti	Clear Time		
Time (0:20 Comments Trial No. Time (0:14	Alarm Yes No No Alarm Alarm Yes No Re	chall. Tirr	Clear Time		Alarm Yes No Distance Alarm Yes No No Alarm	Ro	sponse Chall. Ti	Clear Time	
Time (0:20 Comments Trial No. Time (0:14	Alarm Yes No Alarm Yes No	Re	Chall. Tim	Clear Time Clear Time Clear		Alarm Yes No Distance Alarm Yes No No Alarm	e5 216	sponse Chall. Ti	Clear Time Clear Time Clear Time
Time (0:20 Comments Trial No. Time (0:14	Alarm Yes	Re	chall. Tirr	Clear Time		Alarm Yes	C 5 216	Chall. Ti	Clear Time Clear Time Clear Time
Time /U:20 Comments Trial No. Time /U:14 Comments	Alarm Yes	Re	Chall. Tim	Clear Time Clear Time Clear		Alarm Yes No Distance Alarm Yes No X	e5 216	Chall. Ti	Clear Time Clear Time Clear Time

Test Location:	M-F	ield				Inte	rference Mate	erial: Do	used fi	re
Date:	9/1/58					Ope	erator:	Lozu		
Temperature:	7		<u>-</u>			We	ather:			
·		1 5/N 206-04	J	sw 1 507	Ver -0-7			et S/N 20() -0 5		SW Ver
Pre-test	Alam	n	Response	9	Clear Time		Alar	m	Response	Clear Time
Н	Yes 🔀	No 🗆	BLS MI	≥ f)			Yes 🔯	No 🗆	BU MEI	
G	Yes 🗖	No 🗆	NRV 1	+1			Yes 🔯	No 🗆	MRU ME	11
Trial No.	Distance 7	12 fr	Chall. Time	e Z	<u> </u>]	Distance	22 fr	Chall. Time	
	Alarm	Res	ponse		Clear Time		Alarm	Res	ponse	Clear Time
Time	Alarm Yes		ponoc				Yes 🗆			
10:36	No X]	No 💆			
Comments	7047	17.0	A7				To:	5 227.	DAT	
Continuento		1 Aun	· C 1 10	VE P	x 1071	+	105F R	x 1091	frez se	
	Distance	22fr	Chall, Tim	<u> </u>	L: W	٦ .	Distance		Chall. Time	
Trial No.	Alarm		sponse		Clear Time	١	Alarm	Res	sponse	Clear Time
Time	Yes 🔲]	Yes 🗆			
(0:47	No B						No 🗵			
Comments	10:49 A	Inna	10:50 Rech							
[=]	Distance	22 fr	Chall. Tin	ne		7	Distance	22-10	. Chall. Tin	ne
Trial No.	Alarm		esponse		Clear Time		Alarm	Re	esponse	Clear Time
Time	Yes 🗆						Yes 🗆			
10.56	No 🔁						No 🗵	<u> </u>		
Comments	Toy	218.	SIL					Tos 21	8,516	
Post-test	Alarm		Response		Clear Time		Ala		Response	Clear Time
• • • • • • • •				_				No. I	1	
н	Yes 🛘	No 🗆					Yes 🗆	No 🗆		

Test Location:	M-Fiel	<u></u>	•	Inter	ference Ma	terial:	ites Burn	n15 -
Date:	1/1/58			Ope	rator:	L0 205		
Temperature:	83.6			Wea	other:	57%RH	}	
	Det S/N 9 80 206-0	y ms	SW Ver			Det S/N	45	SM Ver
11: fo Pre-test H G	Alarm Yes No Yes No	Response BLS Me	ęį		Ala Yes 🔼	No 🗆	Response BLS INF	10
	Distance 22 fr	Chall. Time	2:00	7 [Distance	22 15	Chall. Time	2:03
Trial No.		sponse	Clear Time	֓֟֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	Alarm	Res	ponse	Clear Time
Time	Yes 🗆	,		1 1	Yes □ No 【文			
Comments	704 229 D	97			7	5 229	DAT	
	Distance	Chall. Time] [Distance		Chall. Time	
Trial No.	Alarm Re	esponse	Clear Time	֓֟֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֓֓֡֓֓֡֓	Alarm	Res	sponse	Clear Time
Time [2:45]	Yes 🗆				Yes □ No			
Comments								
	Distance	Chall. Time	3	7	Distance		Chall. Tim	ne
Trial No.	Alarm R	esponse	Clear Time	֓֟֟֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֡֓֓֓֡֓	Alarm	Re	sponse	Clear Time
Time	Yes D				Yes ☐ No			
Comments _	Toy 230	511			705	230.	sir	
	Lost Cum	ım						
Post-test	Alarm	Response	Clear Time		Ala		Response	Clear Time
н	Yes No 🗆				Yes 🗆	No 🗆		
G	Yes 🗆 No 🗆				Yes 🔲	No 🗆		

Test Location:	M-F	iell		-		inte	erference Ma	aterial: <u>U</u>	Mits Phos	phone
Date:	9/1/98	-				Ор	erator:	Luza	ı)	
Temperature:		81°F				We	eather:	559, 414		·
	i i	15/N 06-04	h	502)-			Det S/N	n	S/W Ver 1502 D-1
Pre-test	Alarm	1	Respons	se	Clear Time		Al	arm	Response	Clear Time
н	Yes 🙇	No 🗆	Bis v	Mel			Yes D	No 🗆	BLS Los	
G	Yes 🗹	No 🗆	NRV	mey			Yes 🔯	No 🗆	MRV M	E()
Trial No.	Distance	so fr	Chall, Tim	ne 2;	0 J]	Distance	su tr	Chall. Time	2100
		Dan			Clear Time		Alarm	Res	ponse	Clear Time
Time	Alarm Yes	Res	ponse			1	Yes 🗆			
(1:17)	No D						No 🔀			
Comments	704	201. C)A7					7052	31. DAT	
Comments										
Trial No.	Distance		Chall, Tin	ne]	Distance		Chall. Time	е
Trial No.	Distance	Res	Chall, Tin	ne	Clear Time		Distance	Re	Chall. Time	e Clear Time
		Res		ne			Alarm Yes 🗆	Re		Clear
2	Alarm	Res		ne			Alarm	Re		Clear
ZTime	Alarm Yes		ponse	ne			Alarm Yes 🗆	Re		Clear
Time 13:/U Comments	Alarm Yes No		ponse				Alarm Yes 🗆	Re		Clear Time
Time 13:10 Comments Trial No.	Alarm Yes No		ponse				Alarm Yes No Distance		sponse Chall. Tin	Clear Time
Time 13:/J Comments Trial No.	Alarm Yes No		ponse		Time		Alarm Yes No Distance Alarm		sponse	Clear Time
Time 13:/J Comments Trial No. 3	Alarm Yes No S Distance Alarm Yes		ponse Chall. Tir		Time		Alarm Yes No Distance Alarm Yes	Re	sponse Chall. Tin	Clear Time
Time 13:/J Comments Trial No.	Alarm Yes	Res	ponse Chall. Tir	me	Clear		Alarm Yes Distance Alarm Yes No X	R	chall. Tin	Clear Time
Time 13:/J Comments Trial No. 3	Alarm Yes	Res	ponse Chall. Tir	me	Clear		Alarm Yes Distance Alarm Yes No X	Re	chall. Tin	Clear Time
Time 13:/V Comments Trial No. 3 Time 13:/Y	Alarm Yes	Res	ponse Chall. Tir	me	Clear		Alarm Yes Distance Alarm Yes No X	R	chall. Tin	Clear Time
Time 13:/J Comments Trial No. 3 Time 13:/Y Comments	Alarm Yes	Res	ponse Chall. Tir	me	Clear		Alarm Yes No R	chall. Tin	Clear Time Clear Time Clear Time	
Time 13:/V Comments Trial No. 3 Time 13:/Y	Alarm Yes	Res	Chall. Tir	me	Clear		Alarm Yes No To5 21	Chall. Tin	Clear Time Clear Time Clear Time	

	M-E II			to to do some	Material:	Yellon s	inalize
Test Location:	M-Field						
Date:	9/1195			Operator:	Lozu		
Temperature:	83,6			Weather:			
	D. 4.6.71		S/W Ver		Det S/N		S/W Ver
	9 80 206-0'	1 1	020-1	9	80206-05	- 15	1020-1
	7 (0200 0	173					
		T	Clear		Alarm	Response	Clear Time
Pre-test	Alarm	Response	Time	Yes 5		BLS MEI	,
н	Yes No 🗆	BLS MEI		Yes		MRV ME	
G	Yes ☑ No □	MRV H	<u> </u>			I rdico , IE	
	Distance Sufr	Chall. Time		Distance	50 ft	Chall. Time	
Trial No.		T	Clear	Alarm	Res	sponse	Clear Time
		esponse	Time	Yes E		Los / Med	
Time	Yes 🛭 G	Low		No E	1	, ,	
12:22		77 00-		J	ros 233		
Comments	w/ Rgin/ Disr	Tiles			Ray/ Du		
	Wy Kigley Desi	71130		7	L	Chall. Time	
Trial No.	Distance	Chall. Time		Distanc	e 	Crian. Time	
2	Alarm R	esponse	Clear Time	Alarm		sponse	Clear Time
Time	Yes 🗷 BLS	Low		Yes D		Lon	
17:57	No 🖸			No []		
Comments							
	Distance	Chall. Time		Distant	æ	Chall. Tim	е
Trial No.			Clear			esponse	Clear Time
		esponse	Time	Yes I		Coponiac	
Time	Yes DL DL	7			7 77		
14:15					To\$ 231	+ 5/1_	
Comments	Toy 234	216			, 5, 2	1, -1/-	
	Alarm	Response	Clear Time		Alarm	Response	Clear Time
Post-test H		, copolise		Yes [No 🗆		
H	Vec [No i						
G	Yes No C			Yes [No 🗆		

Test Location:	9/1-	Field				Inte	rference Mate	erial:	Viole	Sm	he_
	9/.1-	₹			·	Ope	erator:	L070	1		
Date:		/ -									
Temperature:						vve	eather.				
			-	S/W	Vor		De	et S/N	7	sw	Ver
		Det S/N						206-05	5 M	5027) -1
	7	0206-01	1 1	502	V-1		/ (- 200			
			r		Clear	1 1	· · · · · · · · · · · · · · · · · · ·			\neg	Clear
Pre-test	Ala	rm	Response	e	Clear Time		Alar	m	Response	9	Time
Н	Yes 🖾	No 🗆	BU L	ew			Yes ⊠	No 🗆	ILS ME	.1	
G	Yes 🗹	No 🗆		4		1	Yes 🔽	No 🗆	HEV MI	=0	
Ü				11		•					
	Distance	soft	Chall, Time]	Distance	50 fE	Chall. Tim	e	
Trial No.		30 (0			Clear	า์ โ	T				Clear
	Alarm	Res	sponse		Time		Alarm	Res	ponse		Time
Time	Yes 🔲						Yes 💆	14 L	ACW.		
14:36	No ⊠						No 🗆				
Comments	704	1235	DAT						75. DAT		
	c ha	rje d	Ram/DL	17	Filers		fon bi	e l			
	Distance		Chall. Tim			7	Distance		Chall, Tim	ne	
Trial No.	Distance				Clear	1	T				Clear
2	Alarm	Re	sponse		Time		Alarm		sponse		Time
Time	Yes 🗆						Yes 🏋	H	in		
14:43	No 🛱			<u> </u>			No 🗆			<u></u>	
Comments											
Comments											
						٦	Distance		Chall. Ti	me	
Trial No.	Distance		Chall. Tim	ne		4	Distance			T	Clear
3	Alarm	R€	esponse		Clear Time		Alarm	· R	esponse		Time
Time	Yes 🛘						Yes 🖾	1325			
	No K						No 🗆				
14150		27(<i>c. u</i>	<u>.l.,</u>		_	To:	5 236	516		
Comments	104	236.	211-							•	
					Clear Time		Alai	m	Respons	e	Clear Time
Post-test	Alar		Response	-	inne		Yes 🛘	No 🗆			`
н	Yes 🗆	No 🗆		\dashv			Yes 🗆	No 🗆			
	Yes 🗆	No 🔲		- 1		1 1	169 17	140	l		

Test Location:	M- Field			Interference Ma	aterial: <u>R</u>	ed Smith	<u> </u>
Date:	9/1/58			Operator:	Loze	7	
Temperature:	86'F			Weather:			
Temperature							
	Det S/N		S/W Ver		Det S/N		V Ver
	98 0206-0	4 MS	02D-1	198	0 706-05		07
		T	Clear			Response	Clear Time
Pre-test	Alarm	Response	Time	Yes 💆	No 🗆	ILJ Mel	
Н	Yes No 🗆	BLS Mal		Yes 💆	No 🗆	NES Mel	
G	Yes Ø No □	MRV H:				T T T T T T T T T T T T T T T T T T T	
	Distance 50 fr	Chall, Time		Distance	SU fr	Chall. Time	
Trial No.	Distance 30 W		Clear				Clear
	Alarm Re	sponse	Time	Alarm	Res	ponse	Time
Time	Yes 🗆			Yes 🗆			
15:07	No 🔯	L_		٠ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ	237, 0	47	
Comments	Toy 237	10urfilm	cry fu		<i>US 1</i> , U	/// /	
		Chall. Time		Distance		Chall. Time	
Trial No.	Distance	Chail. Tiffle	Clear				Clear
2	Alarm Re	sponse	Time	Alarm	Res	sponse	Time
Time	Yes 🗆			Yes □			
151/6	No X			140 02			
Comments				پ	6031		
				3			
Trial No.	Distance	Chall. Time		Distance		Chall. Time	
Trial No.			Clear Time	Distance	Re	Chall. Time	Clear Time
3	Alarm R	Chall. Time	Clear Time		Re		
Time				Alarm			
Time 15:10	Alarm Ro	esponse		Alarm Yes No		esponse	
Time	Alarm R	esponse		Alarm Yes No		esponse	
Time 15:10	Alarm Ro	esponse S16-	Time	Alarm Yes No No	Loir (a	esponse	Time
Time 15:10	Alarm Royes D No 12 23 8.	esponse	Time	Alarm Yes No Alarm	Coir (a	esponse	Time
Time 15:10 Comments	Alarm Ri Yes D No 12 704 238.	esponse S16-	Time	Alarm Yes No No	Loir (a	esponse	Time

						•	
Test Location:	M-Fiell			Interference Ma	terial:	G-Vres S	4, he
Date:	9/1/58			Operator:	L0211		
				Weather:			
Temperature:						_	
	Det S/N		S/W Ver		Det S/N		W Ver
	970206-01	1 ms	1021-1	91	5020 G-VY	150	20-1
				1			Clear
Pre-test	Alarm	Response	Clear Time	Ala	ım	Response	Time
Н	Yes ☑ No □	BY LA	~	Yes 🔼	No 🗆	BH LOW	
G	Yes 🛛 No 🗆	MRV +	 ;	Yes 🔯	No 🗆	NRV MED	
Trial No.	Distance 50fr	Chall. Time		Distance	5utz	Chall. Time	
	, , , , ,	esponse	Clear Time	Alarm	Res	ponse	Clear Time
Time		B Lw	Time	Yes 🔼	G.B	Low	
15150	No 🗆			No 🗆			
	704239.	047		7	05 2	5.0AT	
Comments							
	Distance /u fr	Chall. Time		Distance	10 for	Chall. Time	
Trial No.	Distance 70 (1		Clear	1			Clear
2	,	esponse	Time	Alarm		law	Time
Time	- 1	I Low		Yes 🔼	GB		
15:57	No 🗆						
Comments							
Comments							
Comments	Distance 2-5 fr	- Chall. Time	e	Distance	2-5-fr	Chall. Time	
			Clear	Distance		Chall. Time	Clear Time
Trial No.	Alarm F	esponse				esponse	
Trial No.		esponse	Clear	Alarm	· R	esponse	
Trial No. 3 Time 16113	Alarm F Yes D / L P No	esponse V	Clear	Alarm Yes 💆	· R	esponse	
Trial No.	Alarm F	esponse V	Clear	Alarm Yes 💆) IN PC	esponse	
Trial No. 3 Time 16113	Alarm F Yes D / L P No	esponse V	Clear Time	Alarm Yes 💆) IN PC	esponse	
Trial No. 3 Time 16113	Alarm F Yes D / L P No	esponse V	Clear	Alarm Yes 🗷 No 🗆	14 PURI	esponse	Time
Trial No. 3 Time 16:13 Comments	Alarm F Yes D / V P No Toy 240.5	esponse V	Clear Time	Alarm Yes 💆 No 🗆 Ala Yes 🗅	PRINTER	esponse 2.5/L	Time
Trial No. Time 16113 Comments	Alarm F Yes D 74 P No Toy 240. 5	esponse	Clear Time	Alarm Yes 🗷 No 🗆	14 PURI	esponse 2.5/L	Time

							1		
Test Location:	M-Field			Interference	Materi	-	TH		
Date:	9/1/98			Operator:		20-	201		
Temperature:	87°F			Weather:					
				-					
	Det S/N		S/W Ver		Det		140	SM	
	980206-	04 M	5021)-1	L	1802	206-05		502	0-7
				1				\neg	Clear
Pre-test	Alarm	Response	Clear Time		Alarm		Respons	e	Time
Я	Yes X No [I PLS La		Yes	X I	No 🗆	By w	4	
G	Yes 🔼 No [1 NRV L	fi	Yes	KI	No 🗆	NRU M	EI)	
				_					
Trial No.	Distance 3+	Chall. Time	2:w	Distanc	e 3	ta	Chall. Tim	e 2	200
1			Clear Time	Alarm		Res	ponse		Clear Time
Time	Alarm Yes 🗆	Response	Time	1					
16:52	No DX			No I	X.			<u> </u>	· ·
	704241	NAT (n/fen)	•	705	5241.	DAT	(4/-	as)
Comments		our film			Wo	Rain	/ Dut f.	con	
		V-544			7				
			e ·	Distan			Chall. Tim	ne	
Trial No.	Distance /o 7	Chall. Time	e Clear	7		oft	Chall. Tim	ne	Clear
Trial No.	Distance /o (T			Distan	ce /	oft		ne	Clear Time
Time	Distance /0 (T	Chall. Time	Clear	Distan Alam Yes	œ /	oft	Chall. Tim	ne	
2	Distance /0 \(\frac{1}{1}\)	Chall. Time	Clear	Distan	œ /	oft	Chall. Tim	ne	
Time	Distance /0 (T	Chall. Time	Clear	Distan Alam Yes	œ /	oft	Chall. Tim	ne	
7 Time	Distance /0 (T	Chall. Time	Clear	Alarm Yes No	œ /	oft	Chall. Timesponse		
7 Time	Distance /0 (T	Chall. Time	Clear Time	Distan Alam Yes	œ /	oft	Chall. Tim		Time
Time 17:1/ Comments	Distance /0 \(\frac{1}{1}\) Alarm Yes \(\D\) No \(\D\) Distance	Chall. Time	Clear Time	Alarm Yes No	ce /	res	Chall. Timesponse		
Time 17:21 Comments Trial No.	Distance /o (T Alarm Yes □ No 154 Distance Alarm	Chall. Time	Clear Time	Alarm Yes No	ce /	res	Chall. Tin		Time
Time 17:1/ Comments	Distance /0 \(\frac{1}{1}\) Alarm Yes \(\D\) No \(\D\) Distance	Chall. Time	Clear Time	Alam Yes No Distan	EX I	res	Chall. Tin		Time
Time 17:2/ Comments Trial No. Time	Distance /o \tag{T} Alarm Yes □ No IX Distance Alarm Yes □ No IX To IX 2 4	Chall. Time Response Chall. Time Response	Clear Time	Alam Yes No Distan Alam Yes No	EX CE	705	Chall. Timesponse Chall. Timesponse	me	Time
Time 17:21 Comments Trial No.	Distance /o \tag{T} Alarm Yes □ No IX Distance Alarm Yes □ No IX To IX 2 4	Chall. Time Response Chall. Time Response	Clear Time	Alam Yes No Distan Alam Yes No	EX CE	705	Chall. Timesponse Chall. Timesponse	me	Time
Time 17:2/ Comments Trial No. Time	Distance /o \tag{T} Alarm Yes □ No IX Distance Alarm Yes □ No IX To IX 2 4	Chall. Time Response Chall. Time Response	Clear Time	Alam Yes No Distan Alam Yes No	EX CE	705	Chall. Timesponse Chall. Timesponse	me	Time
Time 17:2/ Comments Trial No. Time	Distance /o \tag{T} Alarm Yes □ No 1 Distance Alarm Yes □ No □ No □ To □ To □ To □ To □ To □ To □ To □	Chall. Time Response Chall. Time Response	Clear Time	Alam Yes No Distan Alam Yes No	Alarm	Res Res	Chall. Timesponse Chall. Timesponse	me	Clear
Time 17:1/ Comments Trial No. Time Comments	Distance Alarm Yes No	Chall. Time Chall. Time Response	Clear Time Clear Time Clear Time	Distan Alam Yes No Distar Alam Yes No Yes Yes J	Alarm	Res 705 IS W	Chall. Timesponse Chall. Timesponse 242, S/L Response	e w	Clear
Time 17:2/ Comments Trial No. Time Comments	Distance Alarm Yes No	Chall. Time Response Chall. Time Response	Clear Time Clear Time Clear Time	Distant Yes No Yes J	Alarm	Res Res	Chall. Timesponse Chall. Timesponse 242, S/L Response	e w	Clear

Fest Location:	<u>h</u> -	Field				inte	erference Ma	terial:	Bleck		
Date:	9/2/9	Y				Op	erator.	L020			
Temperature:	76	0 F				We	eather.	765 PH	6mpk	 	
· Cimporation			,				A	en Ligh	म्मानु रक्त	KM	
		Det S/N		SM	/ Ver		E	et S/N		SM	Ver
		1706-04	en en	CO.	20-1		98	0206-05	0	1502	0-1
		1								زار	
In				27°		1					Clear
10:40Am Pre-test	Ala	m	Respons	e	Clear Time		Ala	m	Respons	е	Time
н	Yes 🔯	No 🗆	1345 M	ŧÒ.			Yes 🔀	No 🗆	BLS LO	V	
G	Yes 🔯	No 🗆	NRV 1				Yes 🔼	No 🗆	WRU W	ŀŊ	
Trial No.	Distance	10 fr	Chall. Tim	e 2	.jw]	Distance	lufr	Chall. Tim	e 2	y ou
Trial No.			·		Clear	1	Alam	Pes	ponse		Clear Time
	Alarm	Res	ponse		Time	-	Alam	1100	ponse		
Time	Yes 🗆						Yes 🗆				
10:54	No 💢						No 🗷			<u> </u>	
Comments	TO	4 244	DA7					5244.	DAT		
			Chall, Tim			٦	Distance		Chall. Tin	ne	
Trial No.	Distance		Chail. Till	16		┥				T	Clear
2	Alarm	Res	sponse		Clear Time		Alarm	Res	sponse		Time
Time	Yes 🗆					1	Yes 🗆				
	No A					1	No 🔀				
11)40	110 /4			<u></u>							
Comments											
_											
	Distance		Chall. Tin	ne		7	Distance		Chall. Ti	me	
Trial No.	Distance		Ondi: 1			╡				T	Clear
3	Alarm	Re	sponse		Clear Time		Alarm	Re	esponse		Time
Time	Yes 🗆					7	Yes 🗆				
	No B						No 🗷				
11704		- 26		1				05243	-JIL		
Comments	70	04245.	51 k								
						-					
					Clear		Ala	rm	Respons	e	Clear Time
Post-test	Alarr		Response		Time						
Н	Yes 🗆	No 🗆					Yes 🗆	No 🗆			ļ
							Yes 🔲				

								•
Test Location:	M- Fiz	<u>lj</u>		Interf	erence Ma	aterial:	STB	
Date:	9/2/98			Oper	ator:	Loza)	
Temperature:	77°F			Weat	her.			
. —	Det S/N 980206-	04 m	SM Ver		1	Det S/N TO 206-0	05 4	SM Ver
	78020		J					
Pre-test	Alarm	Response	Clear Time		Ala	ım	Response	Clear Time
н	Yes 🜠 No 🗆	BU H			Yes 🛛	No 🗆	RLS M	El
G	Yes 🌠 No 🛘	NRU ME	V		Yes 🗵	No 🗆	NRV 14	En
				, _[_				
Trial No.	Distance / U 17	Chall, Time	2:00		istance	101+	Chall. Time	<u> </u>
1	Alarm Ro	esponse	Clear Time	.	Alarm	Res	ponse	Clear Time
Time	Yes 🗆			1	es 🗆			
11:19	No 🗵				• ¤ (
Comments	707246.0A	7			Tos 2	46. DA7		
Trial No.	Distance	Chall. Time			istance		Chall. Time	
2	Alarm R	esponse	Clear Time		Alarm	Res	sponse	Clear Time
Time	Yes 🗆			1 5	es 🗆			
11:27	No 🗵				10			
Comments								
Trial No.	Distance	Chall. Time			Distance		Chall. Tim	е
3	Alarm R	esponse	Clear Time	7 [Alarm	Re	sponse	Clear Time
Time	Yes 🗆			1 •	res 🗆			
11:28	No 58			ַן נ	No 💆			
Comments	T04247	2112				05 24	7. 516	
			Clear				Page	Clear Time
Post-test	Alarm	Response	Time	-	Alar	m No □	Response	Time
H	Yes No D				es 🗆	No 🗆		
G	Yes No	l						

	lu -	E 11		Interference Material: D 52					
Fest Location:		Field			,				
Date:	9/2/98			Operator:	602	ره			
Temperature:				Weather.		<u> </u>			
	Det S	S/N	S/W Ver		Det S/N		S/W Ver		
			5020-1	98	0206-09	- 143	50207		
٠	7 60 4	20001	30001						
Pre-test	Alarm	Respons	Clear Time	AI	am	Response	Clear Time		
Н	Yes 🔊 N	O BLS ME	0	Yes 💢	No 🗆	BLS MI			
G		O D MAN F		Yes 🔯	No 🗆	MRV to	u		
							E) .		
Trial No.	Distance / C	Chall. Tim	e 2100	Distance	10,5€	Chall. Time	2:00		
1	Alarm	Response	Clear Time	Alarm	Res	ponse	Clear Time		
Time	Yes 🗆			Yes 🗆					
11:43	No 🗷			No 🔯					
Comments	Toy 24	8- DA7		7	05 241	DAT			
Comments									
Trial No.	Distance	Chall. Tim	e	Distance		Chall. Tim	e		
Trial No.			e Clear Time	Distance	Re	Chall. Tim	Clear Time		
	Alarm	Chall. Tim Response	Clear		Re		Clear		
Time			Clear	Alarm	Re		Clear		
2	Alarm Yes		Clear Time	Alarm Yes			Clear		
7 Time	Alarm Yes	Response	Clear Time	Alarm Yes		sponse	Clear Time		
Time 11748 Comments	Alarm Yes	Response	Clear Time	Alarm Yes		sponse	Clear Time		
7 Time	Alarm Yes No	Response	Clear Time	Alarm Yes No 12	677	sponse	Clear Time		
Time 11748 Comments Trial No.	Alarm Yes No Distance	Response q \(\frac{1}{4} \) Chall. Tim Response	Clear Time	Alarm Yes No 12	677	fcy Chall. Tir	Clear Time		
Time 11746 Comments Trial No. Time	Alarm Yes No Distance Alarm	Response	Clear Time	Alarm Yes No 12	ς <u>λ</u> <u>λ</u>	fcy Chall. Tir	Clear Time		
Time 11746 Comments Trial No.	Alarm Yes No Distance Alarm Yes No No	Response q \(\frac{1}{4} \) Chall. Tim Response	Clear Time	Alarm Yes No Distance Alarm Yes	ς <u>λ</u> <u>λ</u>	fcy Chall. Tir	Clear Time		
Time 11:18 Comments Trial No. 3 Time	Alarm Yes No Distance Alarm Yes No No	Response qdd f Chall. Tim Response GBLow	Clear Time	Alarm Yes No Distance Alarm Yes	ς <u>λ</u> <u>λ</u>	fcy Chall. Tir	Clear Time		
Time 11:18 Comments Trial No. 3 Time 11:55 Comments	Alarm Yes No Distance Alarm Yes No No	Response qdd f Chall. Tim Response GBLow	Clear Time	Alarm Yes No 121 Distance Alarm Yes No 521	ς <u>λ</u> <u>λ</u>	fcy Chall. Tir	Clear Time Clear Time Clear Time		
Time 11:75 Comments Trial No. Time 11:55 Comments	Alarm Yes	Response QLI Chall Tim Response GRUN 249 SIL	Clear Time Clear Time Clear Time	Alarm Yes No 121 Distance Alarm Yes No 521	ς λ l	fcy. Chall. Tir	Clear Time Clear Time Clear Time		
Time 11:18 Comments Trial No. 3 Time 11:55 Comments	Alarm Yes	Response Chall Tim Response GRUN 249 SIL Response	Clear Time Clear Time Clear Time	Alarm Yes No No Alarm Yes No Alarm Yes Alarm Yes Yes Yes Yes X	ς λ l	Chall. Timesponse Response Response	Clear Time Clear Time Clear Time		

704 250.0A7

				Δ.	مرريس	uten be	Em 69	, Cl.	srpetense NF)
Test Location:	9/2/98			Int	erference Ma F - ZYJYF	terial:	LFFF	La pun	
Date:	9/2/98		PI			Lozus			
Temperature:	87°F			W	eather. 7	4%RH	4411	+	
_	Det S/N 970206- C		W Ver 2) →			Det S/N O 206-03		sw 4 502	
Pre-test	Alarm	Response	Clear Time		Ala	erm	Respo	nse	Clear Time
H	Yes 🌠 No 🗆	BLS Low			Yes 🗷	No 🗆	BU D	luu	
G	Yes t No □				Yes	No 🗆	MRU	MED	
,				_					
Trial No.	Distance /oft	Chall. Time			Distance	10tt	Chall. T	ime	
		esponse	Clear Time		Alarm	Res	ponse		Clear Time
Time	Alarm R Yes □	ssponse		1	Yes 🗆				
13/26	No DX				No 💆				
Comments	TOY 251.	DAT			70		. DA7		
		u/fac	<u> </u>			w/·	194		
Trial No.	Distance	Chall. Time]	Distance		Chall.	Time	
7			Clear Time		Alarm	Re	sponse		Clear Time
Time		esponse	Title	\dashv	Yes 🗆			1	
/3:31	Yes □				No DE				
[3.3]				_					
Comments									
		Chall. Time		٦	Distance		Chall.	Time	
Trial No.	Distance	Chail. Time	Clear	╡					Clear
3	Alarm F	tesponse	Time		Alarm	R	esponse	_	Time
Time	Yes 🗆				Yes D				
17:17	No St			لــ			ca (1	<u></u>	
Comments	Tot 252	. SIL				052	S C. 31	· .	
		Beeree	Clear Time		Ala	erro	Respo	onse	Clear Time
Post-test	Alarm Yes □ No □	Response	11116		Yes 🗆	No 🗆			
н	Yes No No				Yes 🗆	No 🗆			

	11						(D)	raktree)
Test Location:	9/2/98			Interfer	ence Mal	terial:	Life -	scruan
Date:	9/2/98			Operat	or	10 20j	, , , , , ,	
Temperature:	8406			Weath	ег			
	Det S/N 970206-	у	SW Ver			oet S/N 	5	S/W Ver
			Clear		Ala	rm	Response	Clear Time
Pre-test	Alarm	Response		$ \cdot $	es 🔼	No 🗆	BLS LOW	
н	Yes No C	100		 	es 🔽	No 🗆	NRU ME	
G	Tes at the	1 MICO DI	=/	. L.				
Trial No.	Distance 3+t	Chall. Time	е	Dis	stance	Jfr	Chall. Time	
(Alarm F	esponse	Clear Time	A	larm	Res	sponse	Clear Time
Time	Yes 🗆			Ye				
1347	No 💆			No				
Comments	Tot 25%.	DAT				253.		far
	on Clu	th h/t	Eas		UL	(10	C7 ×/	144
Trial No.	Distance	Chall. Tim	е	Di	stance		Chall. Time	
2	Alarm F	Response	Clear Time] ,	Alarm	Re	sponse	Clear Time
Time	Yes 🗆			Y.	es 🛘			
13:52	No 又			N	• 💆			
Comments								
Trial No.	Distance	Chall. Tim	ne		istance		Chall. Tim	ne
7	Alarm	Response	Clear Time		Alarm	R	esponse	Clear Time
Time	Yes 🗆			7	es 🗆			
17:5%	No 💢		<u> </u>		10 PK			<u> </u>
Comments	704 25°	1 516				0525	x 516	•
Post-test	Alarm	Response	Clear Time		Ala		Response	Clear Time
Н	Yes No 🗆			-	es 🗆	No 🗆		
G	Yes 🛮 No 🗅			Y	es 🗆	No 🗆		

								,	
Fest Location:	M- Fi	ell		Inte	rference Ma	terial: L	SA oi		
)ate:	9/2/58			Ope	erator:	L09	رها		
Temperature: _	, &2,t			Wea	ather: 7	19, RH			
	Det S/N 980 Lo(-	04 n	SW Ver 5020-1			et S/N 206-05	- m		Ver D — J
	Alassa	Response	Clear Time] [Ala	m	Respons	e	Clear Time
Pre-test	Yes 🗷 No			┪┠	Yes 🗷	No 🗆	BLS LU	w	
н G	Yes X No				Yes 🗖	No 🗆	MRU 4	ElJ	
	Distance 7 &	Chall. Time	2:00) [Distance	7 tr	Chall. Tim	e 2	240
Trial No.		Response	Clear	j	Alarm		ponse		Clear Time
Time	Yes 🗆				Yes 🗆				
14:39	No 🛱			JL		-1 ~ ^	17		,
Comments	Tox 257. 1	-11			/6>	257.0	<u>n</u>		
				7 [Distance		Chall, Tim	10	
Trial No.	Distance	Chall. Time		 -	Distance			Ī	Clear
2	Alarm	Response	Clear Time		Alarm	Re	sponse		Time
Time	Yes D			1 1	Yes 🗆 No 🔼				
/4; 43 Comments								•	
Trial No.	Distance	Chall, Time	:	7 [Distance		Chall. Tir	me	
Trial No.	Alarm	Response	Clear Time	֓֟֟֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	Alarm	Re	esponse		Clear Time
Time	Yes 🗆				Yes □ No 权				
		-0. C.1		ן ר		5 258	Sh		
Comments	107	59, SIL							
									Clear
Post-test	Alarm	Response	Clear Time		Alar	m	Respons	e	Time
H	Yes No 🗆				Yes 🗆	No 🗆			
G	Yes 🗆 No 🗆				Yes 🗆	No 🗆			

Test Location:	m	Field			Interfe	rence Ma	terial:	RAC(R	ifle
	9/2]	98			Opera	tor:	L071	2	uc leaser,
Date:	85	OE			Weath		75% R	Υ.	
Temperature:	- 63								
	D	et S/N		S/W Ver		E	Det S/N		S/W Ver
	Alan		Respons	Clear e Time		Ala	ımı	Response	Clear Time
Pre-test	Yes 🎾	No 🗆	BLS L		-	res 🗖	No 🗆	OUS L	
H G	Yes K	No 🗆	NRU H		-	res 🖎	No 🗆	HRV H	
G			<u> </u>	<u> </u>					
Trial No.	Distance		Chall. Tim	е	Di	stance		Chall. Time	
(Alarm	Res	ponse	Clear Time	A	larm	Res	ponse	Clear Time
Time	Yes 🗆				Ye No				
1471		14 255	D47			To	2 522	DA7	
Comments		1 2))	(P C)						
		on c	1004 4/-	44					
Trial No.	Distance	on c	Chall. Tim		D	istance		Chall, Time	
Trial No.	Distance				= 	istance Alarm	Re	Chall, Time	Clear Time
7 Time	Alarm Yes		Chall. Tim	ne Clear			Re		Clear
7 Time iy:20	Alarm Yes No	Res	Chall. Tim	Clear Time		Alarm es 🔲	Re		Clear
7 Time	Alarm Yes No	Res	Chall. Tim	Clear Time		Alarm es 🔲	Re		Clear
Time iY:20 Comments	Alarm Yes No	Res	Chall. Tim	Clear Time	Y	Alarm es 🔲	Re		Clear Time
7 Time iY:20	Alarm Yes No Distance	Res	Chall. Tim	Clear Time		Alarm es 🖸		sponse	Clear Time
Time iY'20 Comments Trial No.	Alarm Yes No Distance	Res	Chall. Tim	Clear Time	Y	Alarm es io	sponse Chall. Tim	Clear Time	
Time iY:20 Comments Trial No. Time	Alarm Yes No Distance	Res	Chall. Tim	Clear Time	N N	Alarm es lo S Distance		sponse Chall. Tim	Clear Time
Time iY'20 Comments Trial No.	Alarm Yes No Distance Alarm Yes No No No Distance	Res	Chall. Tim	Clear Time	N N	Alarm es Distance Alarm Ves No	R	sponse Chall. Tim	Clear Time
Time i'Y'?20 Comments Trial No. Time I'Y',25	Alarm Yes No Distance Alarm Yes No No No Distance	Res	Chall. Tim	Clear Time	N N	Alarm es Distance Alarm Ves No	R	sponse Chall. Timesponse	Clear Time
Time i'Y'.20 Comments Trial No. Time I'Y'.25 Comments	Alarm Yes No Distance Alarm Yes No No No Distance	Res Re.	Chall. Tim	Clear Time Clear Time Clear Time	N N	Alarm es Distance Alarm Ves No	e:5 y25	sponse Chall. Timesponse	Clear Time Clear Time
Time i'Y':20 Comments Trial No. Time I'Y:25	Alarm Yes No Distance Alarm Yes No 70	Res Re.	Chall. Timesponse Chall. Timesponse	Clear Time Clear Time Clear Time		Alarm es O O O O O O O O O O O O O O O O O O O	e:5 y25	Chall. Timesponse	Clear Time Clear Time

				998	EPA	Reg 7405	-60-48295
Test Location:	M-field			Interference I	Material: A	niacr Re evision	-60-48295 pellet
Date:	9/2/98			Operator:		tus	
Temperature:	86.6			Weather:	7050	LK	
	Det S/N		S/W Ver		Det S/N		S/W Ver
	980201-0	Y MS	020-1	7	80206-03	m	5020-1
•		1	Clear	1			Clear
Pre-test	Alarm	Response	Time	-	larm	Respons	
н	Yes No 🗆	1~2		Yes 🗵		BUL	
G	Yes 🔁 No □	NRU LOW		Yes 🔼	No 🗆	(YRU m	nED
				1		O . II T'	
Trial No.	Distance 3	Chall. Time	2:00	Distance	3ft	Chall. Tim	
1	Alarm Re	esponse	Clear Time	Alarm	Res	ponse	Clear Time
Time	Yes 🗆			Yes 🗆			
14:55	No 🙇			No ₹			
Comments	704 259.	DAT			705 25	9 04)	·
	0-	cloch	y fan				
Trial No.	Distance	Chall. Time		Distance		Chall. Tin	ne
7			Clear	Alam	Re	sponse	Clear Time
Time		esponse	Time	Yes 🗆	-	3501130	
	Yes D			No 🔀			
15:04	/\					•	
Comments							
		O. II T'		Distance		Chall. Tii	me
Trial No.	Distance	Chall. Time		Distance			Clear
]	Alarm Ro	esponse	Clear Time	Alarm	Re	esponse	Time
Time	Yes 🗆			Yes 🗆			
15:10	No 🕱			No 🗷			
Comments	TOY 20	io. 5/L		705	260.5	16	
			Clear			_	Clear
Post-test	Alarm	Response	Time		arm	Respons	
н	Yes 💆 No 🛚	RLS Lon	<u> </u>	Yes 💢	No 🗆	ILI CO	
G	Yes 💆 No 🗆	lunc Hi		Yes 🛛	No 🗆	inru m	EU

TUY 211. 047

TO 5 261. DAT

Temperature:	M-Fiel 9/2/55 64°F -> Det S/N 980206-	69°F	SW Ver 502.)—7	Operato	r. <u>9</u> 9	erial: Cvec LO SN RH et S/N	0	mpi-	/er
7:25A	Alasa	Response	Clear Time		Ala	rm	Response	,	Clear Time
Pre-test	Alam	7 ME	0		es KÓ	No 🗆	By Ho	En	
н	Yes No 🗆	100		↓	s 😼	No 🗆	NRU M		
G	Yes No 🗆	INEV FIF		ـــا لــــــــا	7		1710	-11	
Trial No.	Distance 3 - f	Chall. Time	2:00	Dis	ance	3 -{ r	Chall. Time	<u>ک</u> ;	00
1	Alarm Re	esponse	Clear Time	Al	arm	Res	ponse		Clear Time
Time	Yes 🗆			Yes					
8:06	No 57			No	X				
	Toy 269	DAT			-	TOS 2	62, DA-		
Comments	on cl	with w/f	gn						
	Distance 3 (r		2:W	Dis	tance	3 fr	Chall. Tim	ne 2;	OU
Trial No.									Class
7	Alarm R	esponse	Clear Time	Ā	arm	Res	sponse		Clear Time
7	7.10.11.	esponse			larm s 🔲	Res	sponse		
Time	Yes 🗆	esponse		Ye		Res	sponse		
7	7.10.11.	esponse		Ye	s 🗆	Res	sponse		
Time	Yes 🗆	esponse		Ye	s 🗆	Res	sponse		
Time 8112	Yes 🗆	esponse		Ye	s 🗆				Time
Time 8;12 Comments	Yes 🗆	esponse Chall. Time		Ye	s 🗆	Res	sponse Chall. Tir	me	
Time EHL	Yes Distance ft			Ye	s 🗆	/ft		me	Time
Time 8:12 Comments Trial No.	Yes Distance Alarm	Chall. Time	Time	Ye	s 🗆	/ft	Chall. Tir	me	Time
Time 8:17	Yes Distance T	Chall. Time	Time	Ye	stance	/ft	Chall. Tir	me	Time
Time 8:17 Time Trial No. 8:17	Yes Distance 1 ft Alarm F Yes D No ST	Chall. Time	Time	Ye	stance	/ft	Chall. Tir	me	Time
Time Enl Comments Trial No. 8:17	Yes No No No No No No No N	Chall. Time	Time	Ye	stance	/ft	Chall. Tir	me	Time
Time 8:17 Time Trial No. 8:17	Yes Distance 1 ft Alarm F Yes D No ST	Chall. Time	Time	Ye	stance	/ft	Chall. Tir	me	Clear
Time 8:17 Trial No. 8:17 Time Comments	Pistance ft Alarm F Yes No To 4 26:	Chall. Time esponse	Time	Ye	stance	/ft Re	Chall. Tir		Time
Time 8:17 Time Trial No. 8:17	Yes No No No No No No No N	Chall. Time	Clear Time	Ye No	stance	/ft Re	Chall. Tir		Clear

Test Location:	M- Fight				erference Mat	15.6	PRIME E	XHAO	87
Date:	9/3/98			Op	-	L020			
Temperature:	72°F			We	eather:	80% RH			
. –	Det S/N 9 TU 206-0	Y	SW Ver		•	et S/N)2 U(- U S	<u>"</u>	sw Suz	Ver _ D - 2
		_	Clear	7 [Ala	m	Respons	se	Clear Time
Pre-test	Alarm	Response		┥╏	Yes 🔀	No 🗆		EO	
Н	Yes No 🗆	1.1-	100	-	Yes 🐧	No 🗆	4.1.2	1EI)	
G	Yes No 🗆	NRU #	1EO	ا لـ			Re-Su		-0.[}
		O T:		7	Distance C		Chall. Tim		200
Trial No.	Distance 25 ft		Clear		Alarm		ponse		Clear Time
Time	Yes 🖾 🗸 🗸	Eponse	Time		Yes ⊠	∨x	Lviv		
9:16	No 🗆	<u> </u>				-0.4	0.47		
Comments	70426	+ DA7	61 AF	+ 0	6.4.	5764	brazes	JP	TO
		7	(has(' ())		011			-	7
	9/4844 1.36	- curning	3 311 - 2						347
Trial No.	Distance	Chall. Time			Distance		Chall. Tir		
Trial No.	Distance	Chall. Tim							Clear
ZTime	Distance Alarm Re Yes Yes		e Clear		Distance	Re	Chall. Tir		Clear
2	Distance Alarm Re	Chall. Timesponse	e Clear Time		Alarm Yes No	Re:	sponse	me	Clear Time
7:11	Distance Alarm Re Yes 🔀 No 🗆	Chall. Timesponse	e Clear Time		Alarm Yes No	Re:	Sponse LUW J JPF	(e) §	Clear Time
Time 9:12 Comments	Distance Alarm Re Yes 🔀 No 🗆	Chall. Timesponse	Clear Time		Alarm Yes No	Re:	sponse	(e) §	Clear Time
7:11	Distance Alarm Re Yes No C G SKN Distance	Chall. Timesponse	Clear Time		Alarm Yes No	Re VX *E.J.r.()	Sponse LUW J JPF	@ <u>\$</u>	Clear Time
Time 9:11 Comments Trial No.	Distance Alarm Re Yes B No D GINEN M Distance	Chall. Timesponse Lua Lya tul Chall. Timesponse	Clear Time		Alarm Yes Distance Alarm Alarm Yes Alarm	Re VX *E.J.r.()	Chall. Tiresponse	@ <u>\$</u>	Clear Time
Time 9:12 Comments Trial No.	Distance Alarm Re Yes M No D Column M Distance Alarm R	Chall. Timesponse Lua Lya tul Chall. Timesponse	Clear Time		Alarm Yes Distance Alarm Alarm No Distance Alarm Yes No X	Re VX Ye.jru	Chall. Tin	@ <u>\$</u>	Clear Time
Time Since Comments Trial No. Time	Distance Alarm Re Yes B No D GINLN M Distance Alarm R Yes D	Chall. Timesponse Luc Chall. Timesponse	Clear Time		Alarm Yes Distance Alarm Alarm No Distance Alarm Yes No X	Re VX *E.J.r.()	Chall. Tin	@ <u>\$</u>	Clear Time
Time 9:21 Trial No. Time 9:21	Distance Alarm Re Yes B No C GINLN M Distance Alarm R Yes C No S No S	Chall. Timesponse Luc Chall. Timesponse	Clear Time		Alarm Yes Distance Alarm Alarm No Distance Alarm Yes No X	Re VX Ye.jru	Chall. Tin	@ <u>\$</u>	Clear Time
Time 9:21 Trial No. Time 9:21	Distance Alarm Re Yes B No C GINLN M Distance Alarm R Yes C No S No S	Chall. Timesponse Luc Chall. Timesponse	Clear Time Slan J		Alarm Yes Distance Alarm Alarm No Distance Alarm Yes No X	Re VX Ye.jru	Chall. Tiresponse Chall. Tresponse	ime	Clear Time Clear Time
Time 9:21 Trial No. Time 9:21	Distance Alarm Re Yes B No C GINLN M Distance Alarm R Yes C No S No S	Chall. Timesponse Luc Chall. Timesponse	Clear Time Clear Time Clear Time		Distance Alarm Yes Alarm Distance Alarm Yes Alarm	Re. VX	Chall. Tin	ime	Clear Time
Time 5:72 Comments Trial No. Time 7:71 Comments	Alarm Re Yes B No GINN M Distance Alarm R Yes No No To 4 265	Chall. Timesponse Luc Chall. Timesponse	Clear Time Clear Time Clear Time		Distance Alarm Yes No Distance Alarm Yes No TC	Re:	Chall. Tiresponse Chall. Tresponse	ime	Clear Time Clear Time

st Location:	<u>M- E</u>	.14	W	Ai P/l-1 encl Interference Ma	Spn I	nsectici le	
te:	9/7/98		letian	Operator:	Loz	05.	
	77°6			Weather:	70%, PU+		
mperature:	- 17-						
	Det S/N		S/W Ver	i	Det S/N		S/W Ver
	980246-0	t m	50211	980	1206-05	ms	1-pm
				ı ———			Clear
Pre-test	Alarm	Response	Clear Time	Ala	arm	Response	Time
Н	Yes 🔼 No [DU Hi		Yes 🔀	No 🗆	AU ME	21)
G	Yes No [Yes 🛚	No 🗆	NRU M	ED
rial No.	Distance 3 fr	- Chall, Time	2:W	Distance	3 fc	Chall. Time	2:00
7		Response	Clear Time	Alarm	Res	ponse	Clear Time
Time	Alarm F	Response	Time	Yes 🗆			
וייי	No Ø			No ⊠			
	T04266	707		705	216. DA	7	
omments	, - (- 0)						
	Distance 74r	Chall, Time		Distance	Ifr	Chall. Time	
rial No.	Distance 371	I	Clear				Clear
2	Alarm !	Response	Time	Alarm	Re	sponse	Time
Time	Yes 🗆			Yes □			
2:1	No 💆			1 10 14		l	
omments							
rial No.	Distance -> 1	FT Chall. Tim	e	Distance	-> 1fr	Chall, Tim	
7	Alexander	Response	Clear Time	Alarm	R	esponse	Clear Time
Time		response	Time	Yes 🗆	1		
	Yes 🗆			No 🔯			
2,27	TV(2)	- SII - '		70	5 767.	516-	
mments	[()	· / · · · · ·					
						I .	Clear
				1		I	i Clear
nt toet	Alarm	Response	Clear Time	Ala	ım	Response	Time
st-test	Alarm Yes No	Response		Yes 🗆	No 🗆	Response	Time

		1					0 1 -	-
Fest Location:	M-Fiel.	<u> </u>		Interferen	ce Material: _	tus (27	mife
Date:	9/3/98			Operator:	<u>Lo</u>	2 05		
Temperature:	75°F			Weather:	705,1	J.		
. –				n [544	1)/24
	Det S/N		S/W Ver		Det S/N 9 TU 20 6-	05	fr 502	/ Ver
	980206-1)4 M	5020-1] [7 (0 200		1.302	0-,
			Clear	7				Clear
Pre-test	Alarm	Response	Time		Alarm		ponse	Time
н	Yes 🔀 No 🖸	102 111		Yes			MED	
G	Yes 💆 No 🖸	1 NRV LU	<u>~ </u>	Yes	<u>√</u> № [שורון	MED	
		Chall. Time	7:43	Distar	ice 25 f	Chall	. Time 2	:00
Trial No.	Distance 25-	Chail. Time		J Distal	- 2)7			Clear
	Alarm R	esponse	Clear Time	Alam	n I	Response		Time
Time	Yes 🗆			Yes	-			
10,10	No IS			No	X			
Comments	704 269	DAT			705 26	8. DAT		
	1 Min Tursing	narmyp,	Zmi Smi	ke :				
Trial No.	Distance	Chall. Time		Distar	nce	Chal	I. Time	
2			Clear Time	Alan	,	Response		Clear Time
Time		esponse	Time		<u> </u>			
	Yes □ No ⊠			No	R			
10:19						. •		
Comments								
				7		Cha	II. Time	
Trial No.	Distance	Chall. Time		Dista	nce	Cha	al. Time	
3	Alarm F	esponse	Clear Time	Alar	m	Response		Clear Time
Time	Yes 🗆			Yes				
IV:27	No 🔯			No	TP .			
Comments	704269	516			705269	isik		
							·	
		I	Clear					Clear
Post-test	Alarm	Response	Time		Alarm		ponse	Time
н	Yes 🔲 No 🖸			Yes				
G	Yes No			Yes	□ No □)		

Test Location: Date: Temperature:	MFill 9/3/98 788-			Operator:	2020 18 RH-	3537, In 51	npit_
	Det S/N 980206-1	1 1	5W Ver	1 -	20 6-05		W Ver
Pre-test	Alarm Yes No C	Response	Clear Time	Ala		Response	Clear Time
H G	Yes 🔼 No 🗀	122		Yes 🙇	No 🗆	HRV MED	
Trial No.	Distance 20 (Chall. Time	5re	Distance	zufe	Chall. Time	5rec
	Alarm F	esponse	Clear Time	Alarm	Res	sponse	Clear Time
Time	Yes 🗆			Yes 🗆			
12:14	No 💆			No Æ			
Comments	704270.	DAT FIL		75	5770	DAT	
	- W/ Ka	m/Our Fil	ton	1		Chall Time	
That No.	Distance	Chall. Time		Distance		Chall. Time	Clear
R	Alarm F	Response	Clear Time	Alarm	Re	sponse	Time
Time	Yes 🗆			Yes 🗆			
15.3e	No 💆			No 🙇			
Comments							
	Distance	Chall. Time		Distance		Chall. Time	
Trial No.			Clear Time	Distance	Re	Chall. Time	Clear Time
	Alarm f	Chall. Time	Clear Time		Re		
7				Alarm	Ro		
7	Alarm f	Response		Alarm Yes No 5			
Time	Alarm F	Response		Alarm Yes No 5		esponse	Time
Time Comments	Alarm F Yes D No R TO 9 27	Response . SIL		Alarm Yes No 5	7057	esponse	
Time	Alarm F	Response Response	Time	Alarm Yes No 5	7057	o/- S/V-	Time
Time Comments Post-test	Alarm Yes No P Alarm Alarm	Response . SIL	Time	Alarm Yes No 5	m No 🗆	Pesponse Response	Clear